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HISTORY
OF THE
BRITISH RAILWAYS
DURING THE WAR
1939-45

by R. BELL, C.B.E.

with a foreword by Sir William Wood,
President, London Midland & Scottish Railway

THE RAILWAY GAZETTE
33, TOTHILL STREET, WESTMINSTER, S.W.1

L.N.E.R. Chief General Managership

SIR CHARLES NEWTON, who will retire under the age limit on June 6, from the Chief General Managership of the London & North Eastern Railway Company, has held that office under circumstances of peculiar difficulty. His appointment to a seat on the Board of the company, which will take effect as soon as he relinquishes his present position, is a recognition of the success with which he has surmounted many grave obstacles. It is now almost fifty years since he first entered the railway service—in the Chief Accountant's Office of the Great Western Railway. He has been with the L.N.E.R., or its predecessors, since 1916, when he joined the Great Eastern Railway. His appointment as Chief General Manager dates from March, 1939, only six months before the outbreak of war. Practically the whole of his term of office, therefore, has been made the more burdensome by the many difficulties arising from the war, and with the transition from war to peace; in addition, practically since the end of hostilities, he has had to devote much time to problems raised by the impending nationalisation of the railways. Mr. Miles Beevor, Chief Legal Adviser, who has been appointed Acting Chief General Manager from June 7 next, joined the L.N.E.R. in 1943. His legal background and training make him peculiarly fitted for the post, in view of the impending changes under the Transport Bill.

* * * *

Lord Portal on the Transport Bill in the Lords

On Tuesday last the Transport Bill commenced its journey through the House of Lords. It was made clear at the outset by Lord Swinton that the Opposition would give the measure a Second Reading without a division, but he was none the less critical of the Bill, and he recalled pertinently advice which had been tendered by the Lord Chancellor, that the House should be chary of giving a Second Reading to a Bill which tried to translate a political manifesto into an Act of Parliament. Lord Portal warned the Government that it was attempting to impose a major operation on transport before it had even thought out a plan. He made it clear that there was no need for the present haste. The railways were already under Government control, and that position could have continued until a plan had been made and approved. There was no financial urgency, for the main-line railway companies would be more than able to finance any scheme they carried out in the next few years. Manpower and materials, not finance, were the limiting factors. Recalling that after the groupings resulting from the 1921 Act, it had taken the railways over five years to amalgamate and consolidate only one form of transport, he doubted if the Government appreciated the magnitude of the task to be carried out before the end of this year. Insistence on January 1, 1948, as the vesting date would lead to a good deal of dislocation because of the far more comprehensive scope of the Government scheme to deal with the whole of inland transport.

* * * *

Sir James Milne Warns Holiday Travellers

A clear picture of the disabilities under which the railways will endeavour to cope with what is expected to be a record holiday traffic this summer, was given by Sir James Milne, General Manager of the Great Western Railway, in an article he contributed to the *News of the World* last Sunday. Our readers will be familiar with the many difficulties in which passenger travel will be conducted during the coming months, but it is as well that the general public, some 7,000,000 of whom buy this Sunday paper, should have brought home to it with all the authority of intimate knowledge behind Sir James Milne's words, the probability of extreme discomfort during the peak holiday periods. The reduction in the summer timetable service by 10 per cent., which the Minister of Transport has directed, will mean greater crowds at stations, longer queues, and a great deal of standing in trains by long-distance travellers. Timekeeping will suffer from the speed restrictions made necessary by the lack of new rails and sleepers, and by the priority accorded coal traffic and similar conditions. Sir James Milne pointed out that within their limited resources the railways would make every effort to provide the best

possible train service this summer, but courageously he has laid the facts before the public.

* * * *

Railway Fares, Traffic, and Revenue

The Minister of Transport's suggestion that it may be necessary to increase railway fares this year has been the subject of correspondence in *The Times*. Sir Frederick Heaton, in a letter published on May 15, said that, although higher fares might attract some increased revenue on the main trunk lines, on branch lines they would divert traffic to competing bus services. He added that the ordinary third class railway fare was now 2·1d. a mile, but bus fares averaged a shade over a 1d. a mile. He suggested that road fares and services in competition with rail should be considerably increased, and, possibly, many railway fares reduced. Sir Eustace Missenden, Chairman of the General Managers' Conference, replied in *The Times* of May 20, and pointed out that although the ordinary third class railway fare is now 2·1d. a mile, in 1938 only 6 per cent. of railway passenger journeys were at full ordinary fares; in 1945 the figure was 8 per cent. The over-all average railway passenger fare, including workmen's tickets, season tickets, and other reduced fares, in 1945, was just over 1d. This has been raised to 1·1d. a mile by the increase in railway passenger fares from July 1, 1946.

* * * *

Institution of Locomotive Engineers Luncheon

Before the war the annual dinner of the Institution of Locomotive Engineers was one of the best-attended of similar functions held by professional bodies connected with the railway industry, and the luncheons which were instituted during the war, when evening engagements were at a discount, proved equally popular. The luncheon held last week, with Mr. F. S. Whalley, the President, in the chair, proved no exception. Mr. Alfred Barnes, the Minister of Transport, was the guest of honour, and others who attended by invitation included many who are prominent in a number of branches of the railway industry. A brief report of the speeches is given elsewhere in this issue. A tribute to the work of the locomotive engineer and the Institution was the keynote of the Minister's speech, and Mr. Whalley struck a happy note in his reference to the Overseas Branches of the Institution and the many members of the parent body which those branches embraced. Mr. O. V. S. Bulleid, in jocular vein, referred to some of the matters which have been the subject of discussion between the private locomotive building industry and the railway companies, in extending a welcome to the guests who on this occasion accounted for 46 per cent. of the large number who attended.

* * * *

Swiss Railway Centenary

The first railway built on Swiss territory was the 1-2 mile St. Louis to Basle section of the Strasbourg-Basle line. It was opened to traffic on June 15, 1844, but was built by a predecessor of the Eastern Railway of France, and was no more than the extension of that system from the frontier into the town of Basle. The first Swiss railway was that connecting Zurich with Baden, which celebrates its centenary of opening this year. A plan for a railway linking Zurich with Basle on the one hand, and Lake Constance on the other, had been formulated as early as 1836, but difficulties with Cantonal concessions prevented the plan going forward, and it was not until ten years later that the Swiss Northern Railway was formed, and built the 14½-mile line between Zurich and Baden which was opened for public traffic on August 9, 1847, after a ceremonious inauguration on the previous day. In view of opposition from the Basle authorities, and the disturbed political conditions then obtaining, the company shelved the idea of extending the line to Basle. The railway received the nickname of the Spanish-Brödli-Bahn (Spanish Bun Railway) as it enabled Zurich citizens to obtain more rapid delivery of a delicacy of that name which was a Baden product. Incidentally, the initials S.B.B. are those now used by the Swiss Federal Railways (Schweizerische Bundesbahnen) in its German-language literature. To mark the centenary this year, a jubilee train is touring the country from April 20 until October 22 offering return rides over 8 to 12 mile sections at a fare of fr. 1·50, irrespective of class. This train is illustrated at page 535, and the brochure announcing the arrangements is noticed in our "Publications Received" column.

* * * *

Rising Costs in Canada

Some important passages in the speech by Mr. W. M. Neal, Chairman & President of the Canadian Pacific Railway, at the company's annual general meeting, dealt with the increasing costs of railway operations. As reported on page 542 this week, Mr. Neal recalled the application made by the Canadian railways last October to the Board of Transport Commissioners for a general increase of 30 per cent. in freight rates, with certain exceptions, in order to counterbalance their rising expenditure. Apart from the burden of labour and material prices, the cost of locomotives and rolling stock is much increased. Mr. Neal stated that a class of locomotive that 35 years ago would have cost about $22,000, now costs $120,000. The price of a first class coach originally costing $15,000 has risen to $52,000, and box-wagon prices have gone up in about 30 years from $1,200 to $5,400. The railways do not ask for an increase that will reimburse them in full for the higher costs, but seek merely to improve their position so that increased efficiency will enable them to maintain rates in Canada at a level continuing to be the lowest in the world.

* * * *

"When the Wheels Slow Down"

The use of the guillotine by the Government during the passage of the Transport Bill through the House of Commons has curtailed and prevented discussion of a large number of important amendments; moreover, the time available for discussion was cut down even further because of the numerous amendments which the Minister of Transport saw fit to make. If the case for the transport industry is not to go by default, therefore, an attempt must be made immediately to put the facts before as many people as possible. With this object in view, the Road Haulage Association has made a new film, which will form the spearhead of its publicity campaign during the coming summer. This film, called "When the Wheels Slow Down," is forceful, direct, and has as its theme the brake which inevitably will be put on transport under nationalisation. The object of the film, which is in light vein though the subject is serious, is to warn the Government and the country as a whole that the cumbersome machinery which it is proposed to set up under the Transport Bill must slow down the flow of essential traffic, no matter how well meaning the civil servants may be who will have to operate the scheme. Further details of this new campaign by the R.H.A. are given elsewhere in this issue.

* * * *

Junctions in Flat-Bottom Track

As flat-bottom rails are used so widely throughout the world, including the U.S.A. and many parts of the British Empire, it may seem surprising that so much experimental work is involved in the adoption of flat-bottom track to Great Britain, where the bull-head chaired rail has been standard for a century. It should be realised, however, that the flat-bottom rail was evolved primarily for spiking direct to the sleeper, and this is still the practice in many parts of the world on lines where traffic is not intensive; hence the broad base of the British Standard F.B. rail. With railways carrying heavy traffics, such pioneer arrangements are long since outmoded, and point-and-crossing work in F.B. rail has developed into a highly complex structure, involving many components. One of the most striking differences between British Standard B.H. design and F.B. design concerns the number of fastenings, and this is one of the respects in which both experiment and experience are necessary under British conditions. It is interesting to recall that about 1936 chaired track was being used in tunnels in Germany and Austria, despite the general standard in these countries being the use of F.B. rail. The principal reason for this radical departure from normal practice was to be found in the relatively few small metal parts with chaired tracks, compared with the fastenings used with the F.B. type laid on baseplates. This

week we illustrate at page 536 the most extensive installation of 110-lb. F.B. switches and crossing in Great Britain, which was put in towards the end of last year by the L.N.E.R. at Benton Quarry on the East Coast main line north of Newcastle.

* * * *

Holiday Camp Railway Traffic

Even before the war, when accommodation was not so difficult to find, the popularity of the holiday camp was on the increase, and at the present time, when the number of workers entitled to a paid holiday has increased by about 11 million since the war and accommodation presents a serious problem, the holiday camp is meeting a very real need. Taking the Butlin camps alone, there will be five of these in operation this year, against only three last year, and they will cater for 500,000 visitors. Adequate transport facilities are essential to the success of a venture of this nature, and at the official opening of Filey Holiday Camp Station, L.N.E.R., which is reported elsewhere in this issue, deserved tributes were paid to the L.N.E.R. for its enterprise in providing a new branch line and station for the exclusive use of campers, who are expected to number 125,000 at this Yorkshire camp this summer. Similar examples of railway enterprise are reported from other parts of the country. For example, at Pwllheli the G.W.R. has in hand a scheme for a new layout of the locomotive yard and the doubling of a mile of line to handle increased traffic for the Penychain holiday camp, while the L.M.S.R. is providing improved station facilities at Ayr for another Butlin camp.

* * * *

Welded Carriage-Underframes, L.M.S.R.

The introduction of the welded carriage-underframe on the L.M.S.R. by Sir William Stanier in 1934 was a major event in the development of passenger-vehicle design, in which the long-continued use of the standard riveted frame had created an impression of reluctance to depart from fixed standards. The subject was covered, in a general sense, by Sir William Stanier in a paper which he presented to the Institution of Mechanical Engineers in 1939; this was, however, a review of lightweight passenger rolling stock and thus was not intended to be so comprehensive an account of welded underframes as that provided by Mr. A. N. Moon and Mr. G. Foster in their paper to the Institution of Locomotive Engineers, a summary of which we publish elsewhere in this issue. The saving in weight due to this form of construction is about 13 cwt. per frame; further, it can also be applied to bogie construction; and as the frame and bogies together are about 45 per cent. of the total weight of the vehicle, the potential savings cannot be ignored. A point during a discussion which followed the paper, was the desirability of establishing the centre coupling as standard. A simpler and stronger design could be used, with higher permissible buffing stresses, if we could discontinue side buffers and adopt the central longitudinal type as standard; also by so doing the way would be paved for the introduction of automatic couplers.

* * * *

An Error in Block Working

The cause of the collision at Stafford, L.M.S.R., on December 7, 1946, was an error in block working, to which the failure of a fireman's call pillar partly contributed. There was no dispute about any of the essential facts involved, given in our summary of Colonel Trench's report at page 543. The signalman had pulled off his home signal for the local train to run into the platform road, and, gaining a false impression that it had passed and that he had seen its tail light, replaced his lever, accepted the express soon after, and cleared all signals for it to pass on the through line. In this way the local train driver found the signals against him and saw them cleared for the wrong route after he had stopped and the fireman had failed to make the call pillar work. He drew forward to the box to send to warn the signalman, but the collision followed. Fortunately the train was lightly loaded. The call pillar worked on the open circuit principle with reply feature. Colonel Trench recommends more frequent testing, but considers there is no reason for giving track circuiting at Stafford higher priority than it now has in the improvements programme.

Value of British Railway Systems

THE terms of the Transport Bill before Parliament are very uncertain as to the manner in which the British railways will be operated. It would be a matter for regret if the individual character of the companies disappeared, not merely from the viewpoint of sentiment, but from that of efficient operation. It is hoped that in the event of nationalisation the identity of the present railway groupings will be retained for some years to come.

The value to the country of the *esprit de corps* which has been built up by generations of administrators and staffs is inestimable, and it is hoped that the main features and structure might be retained as far as possible to preserve this. A team spirit promotes healthy and enhusiastic competition which leads to greater efficiency.

Under nationalisation, the railways of India are still operating under their original companies' identity with such well-known names as the Great Indian Peninsula, North Western, East Indian, and so on. Although the Indian railways have been nationalised for a considerable time, they are administered by General Managers and separate administrators, although they are controlled by the Central Railway Board Authority. It is significant that the names of the old companies persist, together with their distinctive colourings on the rolling stock, and to some extent the uniforms of their staff, and at the present time this is helping to retain that team spirit which is most desirable.

Statistics of operation are still maintained by the separate administrators, as they have been for many years; comparisons with other railways are still a feature of the administrators' analysis of work done; and experience has shown that they are extremely valuable. In the long run, there is no doubt that it infuses a spirit of healthy competition which invariably leads to improvement in the efficiency of operation of the railway system as a whole.

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Railway Clerks' Attack on R.E.C.

IRRESPONSIBLE speeches have long been a feature of many annual conferences, but we read with considerable astonishment the press reports of the R.C.A. Conference at Torquay last week, during which the members are reported to have accused the R.E.C. of responsibility for the coal crisis and a determination to sabotage national reconstruction.

It is also reported that they passed a resolution expressing the view that the present operation of the railways was causing dislocation of industry, and demanding "reconstruction of the R.E.C. to include people possessing practical experience of the industry."

These are grave but ludicrous charges, and we are surprised that the R.C.A. did not realise that they were directly attacking the Minister of Transport, who is Chairman of the R.E.C. and, incidentally, the only member who does not possess any lengthy practical experience of the industry. The other members of the Committee are Sir James Milne, General Manager, G.W.R., who is Deputy-Chairman of the Committee; Sir William Wood, President of the L.M.S.R.; Sir Charles Newton, Chief General Manager, L.N.E.R.; Sir Eustace Missenden, General Manager, Southern Railway (all of them have spent a lifetime in the railway service and have had very wide practical experience); and Lord Ashfield, whose name is synonymous with London passenger transport. There could be no body of men with greater practical experience of the industry, and their work is assisted by sub-committees of the chief officers responsible for every phase of the manifold activities of the railways.

The suggestion that the Committee was responsible for the coal crisis follows the pattern of a number of similar attacks made on the railways outside Parliament in recent months. They are political in origin and doubtless are made for the purpose of attempting to justify the Government's nationalisation proposals contained in the Transport Bill, as the latter contain no plan whatever for achieving the co-ordination of road and rail transport, which is the major problem to be solved.

The inescapable fact is that the February coal crisis was due to inadequate coal production during several previous

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years. Throughout the whole of 1946, industrialists and the R.E.C. continually drew attention to their rapidly dwindling coal stocks, but production failed by millions of tons to reach the bare minimum level of supplies required. For example, railway stocks of coal, which stood at three weeks' supply in 1944—the lowest level consistent with avoiding uneconomic inter-depot haulage—were reduced to about 4 days' stock by the end of 1946. It became necessary, therefore, for the R.E.C. to cancel 1,300 passenger trains daily in December and January with the object of safeguarding the scanty stocks of coal.

Early in February, the general shortage of national coal stocks at electricity and gasworks was aggravated by the most severe weather, which prevented the railways effecting their normal clearances from the collieries, and industry was brought to a standstill over a wide area. Exceptional measures were taken by the R.E.C. to meet the unprecedented circumstances, and, within a comparatively short time, normal clearances were resumed. Since that date, industry generally has received only a restricted allocation of coal, and the fact that the Government has fixed a target of 200 million tons to be raised in the present coal year and can give no assurance that it will be achieved—although the T.U.C. insists that a minimum of 220 million tons is required—proves that the coal crisis is due entirely to reduced production compared with pre-war. Further, it is the fact that during the whole of 1946, only 350,000 tons of coal out of a total output of 189 millions was lost through transport difficulties and shortage of wagons.

Another point to be borne in mind is that the quality of coal now being supplied to the railways is very inferior to that supplied before the war, and in some cases it is entirely unsuitable, for example, house coal. It is estimated that if the railways could be supplied with coal of the pre-war quality, they would require one million tons less and their locomotive performance would be greatly improved. To save coal, they commenced converting 1,200 engines from coal to oil burning last year, but instead of the work being completed this spring, the position is that, because of the inability of the Government to supply them with the necessary equipment for the ground installations, only 25 of these engines have been altered, and the saving effected is trifling compared with the total expected.

As to the charge that the R.E.C. is sabotaging the national reconstruction effort, the facts as to the present railway difficulties will be explained shortly to representative members of the staff at meetings to be held by railway district officers throughout the country, and the staff will be asked to co-operate in overcoming local difficulties. These meetings doubtless will make it clear that during the war the railways could not carry out their normal repair and renewal programmes, and, when the war ended, they were faced with a heavy accumulation of repairs to their permanent way, rolling stock, and so forth, which certainly must be restored to its pre-war condition before any improvements in service can be effected.

Ample funds are available to cover the cost, as there are nearly £116 millions in the maintenance trust funds, and the railways have lodged a further preliminary claim for £40 millions to cover the cost of abnormal wear and tear of their plant by war conditions. The Government, however, because of the large number of competing demands, has not been able to give the railways sufficient allocations of timber and steel to enable them to make any appreciable progress in overtaking arrears; in fact, the position of coaching stock has deteriorated since the end of the war.

The introduction of the five-day week in the mining and engineering industries necessitates the use of many thousands of additional wagons, although the operating stock is far below the pre-war level because of the very large increase in the number under and awaiting repair. As priority is still to be given to the conveyance of coal, there is a risk that the available wagon supply may not be sufficient to meet the requirements of industry generally during next winter, unless in the meantime the Government makes available to the railways increased allocations of essential materials. We imagine, therefore, that when these facts and other relevant considerations are brought home to the staff, the unfounded nature of the allegations made at the R.C.A. Conference will be appreciated.

The Government of India Railway Inspectorate

IN India a Government Inspectorate watches the interests of public safety, of the Government of India, of Indian sovereign states, and of the shareholders of company-owned railways. The inspectorate is somewhat similar to that under the Ministry of Transport in the United Kingdom, but has wider responsibilities and, because of the vast distances in the sub-continent, is decentralised. Before 1941, it was responsible to the Railway Board administering Indian railways. In that year, however, it was removed from the jurisdiction of the Board, as recommended by the Pacific Locomotive Committee of 1938, on the principle that those responsible for the inspection of railways should be independent of the authority administering those railways. In reorganised form the Inspectorate was placed under the Communications Department. It consists of a Chief Inspector and five inspectors, each responsible for a separate geographical circle, in which his headquarters is situated; two are at Calcutta and one each at Bangalore in Southern India, at Lahore in Northern India, and at Bombay. All inspectors are recruited from the Indian Railway Service of Engineers, but since 1941 have not been permitted to revert to the railways, nor are they eligible for any appointment under the Railway Board.

The Chief Inspector, as well as directing the organisation of the Inspectorate, is the principal technical adviser to the Government of India on matters concerning the Inspectorate. Government railway inspectors primarily are required (*a*) to guard against all possible railway accidents by systematic inspection of all lines in their respective circles, and (*b*) to conduct inquiries into the causes of the more serious accidents. They are responsible for making regular periodic inspections of existing or open lines, and also for inspecting new lines on their completion, with a view to determine whether they are fit to be opened for the public carriage of passengers. Regular open-line inspections are either (1) detailed, or (2) tour inspections. An inspector has to inspect in detail 25 to 30 per cent. of the main and subsidiary lines in his circle annually, and 75 per cent. of the small, independent lines. He must also make tour inspections of about 33 per cent. of the total route-mileage each year. Actually, the average aggregate annual mileage inspected by all inspectors during the four-year period 1941-42 to 1944-45 was 24,750 or 61 per cent. of the total Indian route-mileage, their detailed inspections covering 39 per cent. and tour inspections 22 per cent.

The following questionnaire, which an inspector has to answer or comment on in his annual reports, gives some idea of the scope of these inspections:—

(i) Are the sub-grade works, bridges, tracks, accommodation works, signalling and interlocking equipment, locomotives, and rolling stock properly maintained?

(ii) Is the operation of the railway being carried out in such a manner as to secure the safety both of the public and of persons operating the railway, and are the staff thoroughly familiar with their duties and the rules?

(iii) Are facilities for passengers such as means of communication between passengers and guard, the exhibition of timetables, tables of fares, authority for quoting rates, reservation for the exclusive use of women of at least one lowest class compartment, provision of safety catches on the doors of compartments, arrangements for dealing with traffic, booking arrangement and waiting accommodation, refreshment arrangements, latrines, and the general sanitary conditions of the same, adequately provided?

(iv) Do adequate arrangements exist for fire-fighting?

(v) Is the equipment in relief trains and first-aid boxes, and medicine chests properly maintained?

If there are any works which he considers should be carried out in the interests of public safety, he makes a special remark to this effect in his report.

As already inferred, these inspections cover not only all railways owned by the Government of India, but also (*a*) those belonging to Indian States and (*b*) private companies and local bodies; these constitute 18 and 5½ per cent. respectively of the total route-mileage. An inspector makes such inspections either on behalf of the Government or Govern-

ments concerned, to insure that their assets are adequately and properly maintained, and in some cases, additionally, as an *ex officio* director of a railway company, to protect the interests of shareholders. A further important duty of an inspector is to act as adviser to the Provincial Governments, with which his circle is concerned, in all matters relating to railways.

Government inspectors are required to conduct inquiries into the causes of serious accidents only. These include accidents to passenger-carrying trains attended with loss of life or serious injury to any persons in the trains, or involving damage to property to the value of £1,500 and upwards. Less important accidents are the subjects of inquiries of committees of officers of the railway concerned; copies of their findings are supplied to the relevant Government inspectors. The latest available report by the Chief Government Inspector, covering the period 1941-42 to 1944-45, is dealt with in the following editorial.

* * * *

Recent Accidents on Indian Railways

THE report of the Indian Chief Government Inspector of Railways on the working of the Railway Inspectorate for the four-year period 1941-42 to 1944-45, recently released by the Government of India, discloses a marked increase in most classes of accident, resulting mainly from the war and unsettled internal conditions in the sub-continent. The largest increases took place in accidents resulting from collisions between, and derailment of, trains, failure of engines and rolling stock, fires, and from train-wrecking or attempted train-wrecking during 1942-43. The increase in collisions and derailments was mostly due to the railways having had to employ inexperienced additional staff to cope with heavy increases in wartime traffic. Inferior coal, the difficulty of obtaining spare parts, and intensive use under stress of wartime conditions, were responsible for the increase in engine and rolling stock failures.

The largest increase in accidents due to fires and train-wrecking resulted from the widespread political disturbances throughout India in 1942. The most seriously affected railways were the East Indian and Bengal & North Western—now part of the Oudh & Tirhut Railway—and, to a lesser extent, the Bengal-Assam and Madras & Southern Mahratta systems; there were no fewer than 63 derailments during that year, though fortunately the majority of them did not cause loss of life. During 1933-34 extensive damage caused by abnormal floods and cyclones resulted in interruption of traffic on almost all the more important railways. The most serious breaches were those on the E.I.R. in July, 1943, when the Damodar river burst its protection works and reverted to one of its old courses, causing great gaps in the main and Howrah-Burdwan chord lines, and almost entirely cutting off Calcutta from northern India.

During the five years 1940-41 to 1944-45, the numbers of accidents of all kinds were 20,285, 22,191, 22,654, 22,605, and 23,335, and the equivalent figures per million train-miles were 104·6, 111·5, 133·3, 137·0, and 135·7 respectively. Some 90 per cent. of these accidents fall under three categories, derailment of trains, failure of engines and rolling stock, and trains running over cattle on the line. Incidentally, this latter class of accident, in common with trespassers run over and suicides, is so general mainly because a high percentage of lines are unfenced. The average numbers of cases reported of cattle run over is about 5,000, and of trespassers killed and suicides about 3,000 each year. On the other hand, the numbers of collisions between trains during this quinquennial period were remarkably few, and varied between 1·2 per million train-miles (in 1941-42) and 2·6 per million train-miles (in 1943-44). The total numbers of passengers carried were 575·7, 623·2, 622·3, 789·9, and 926·7 million. The aggregate route-mileage of all lines remained nearly stationary at about 40,500. Total casualties, as distinguished from accidents, per million passengers carried varied between 4·6 and 6·5 killed, and 29·9 and 37·7 injured, 1944-45 being the best year in both cases.

In the four years reviewed by the report, the Government Inspectors conducted inquiries into the causes of 63 accidents, including 31 collisions and 28 derailments. Their findings showed that failures of train crews and/or station staffs, or of other railway staffs, were mainly responsible. Other causes of collisions were the opening of carriage doors on parallel tracks with inadequate spacings, and rashness on the part of road vehicle drivers at level crossings. Failures of embankments and culverts in times of floods, failures of axleguards and bearing springs, inadequacy of brake power, defective track, and train-wrecking all contributed at different times to derailments. Among the recommendations made in the inspectors' reports were that general and subsidiary rules affecting running staff should be translated into various Indian languages and the translations issued to the staff; also that anti-telescoping devices and the construction of collision-resisting coaches should be developed and standardised.

Special mention is made in the Chief Inspector's report of the inspection and reopening to traffic in May, 1942, of the 137-mile 5 ft. 6 in. gauge extension of the North Western Railway from Nok Kundi to Zahidan in Persian territory, originally constructed during the 1914-18 war, but subsequently dismantled. Sanction to the running of various new types of locomotive are also recorded, including the "MacArthur" (Mikado), "X-Eagle," Consolidation and diesel-electric American types, and the "X-Dominion" from Canada. Many important measures, such as doublings, sanctioned to increase line capacity for war traffic, are referred to, as well as the movement of out-of-gauge military loads.

* * * *

South African Railways & Harbours

IN his first report on the activities of the South African Railways & Harbours, Mr. W. Marshall Clark, who assumed office as General Manager on October 17, 1945, has extended his review outside the limits of the year ended March 31, 1946, in order to present a complete picture of the many railway developments which have taken place in the Union since the war. Total revenue from railway and associated operations in 1945-46 was £60,496,882, an increase of £5,464,975, but expenditure rose from £53,999,417 to £61,214,981, with the result that a deficit of £718,099 was shown on the railway undertaking. In the preceding year, the railways produced a surplus of £1,032,490. There was again a deficit on harbour working, although reduced from £575,012 to £387,257. Steamships and airways both realised a surplus, that from steamships being £59,348 lower, while a surplus of £18,290 from airways compared with a deficit of £24,604 in the preceding year. There was a combined deficit from all services of £883,088, as against a surplus of £698,535 in 1944-45. Appropriations to net revenue again take £987,000, consisting of £500,000 to betterment fund, and £487,000 to reduce a deficiency in pension and superannuation funds. The final result for the year was a deficit of £1,870,088, compared with a deficit of £288,465 in the preceding year. The total earnings of £53,187,895 from railway transport services showed an increase of £4,418,804 on the preceding year, and constituted a record. New high levels were reached under all heads with the exception of mails. Some results for the year are compared below:—

	1944-45	1945-46
Route-miles open	13,305	13,309
Train-miles	70,226,101	71,922,225
Passenger journeys	218,823,055	233,924,293
Goods and minerals (tons)	25,874,702	25,472,114
Coal traffic (tons)	15,545,108	15,510,062
Ton-miles (revenue earning)	9,664,670,201	9,815,847,170
Average haul (miles)	230	236
Operating ratio, per cent.	75·03	77·29
Percentage return on capital	£3 7s. 4d.	£2 8s. 0d.
	£	£
Passenger receipts	13,762,946	14,766,600
Goods and mineral receipts	26,069,478	28,467,267
Coal traffic receipts	5,152,891	5,591,567
Total earnings	48,769,091	53,187,895
Ordinary working expenditure	32,886,891	38,189,619
Depreciation	3,703,220	2,921,787
Surplus over working expenditure	12,178,980	12,076,489
Surplus over interest, etc.	1,032,490	dr. 718,099
Capital expenditure, open lines	181,221,861	186,150,475

Expenditure on railway transport services amounted to £41,111,406, an increase of £4,521,295, or 12·36 per cent. The largest increase under individual operating items was 18·65 per cent. for traffic expenses, accounted for by additional staff, increased payments in respect of claims compensation, and overtime and Sunday time in order to cope with the large volume of traffic. Maintenance of rolling stock expenses rose by 13·15 per cent., the cost of materials being higher and extra maintenance work being called for by

reason of the intensive use of vehicles. There has been a fairly steady rise in the operating ratio since 1942-43, approximating to 2 per cent. a year, the figure for 1945-46 being 2·26 per cent. over the preceding year at 77·29 per cent. The total railway mileage operated by the administration at March 31, 1946, was 13,931 miles, consisting of 13,138 miles of 3-ft. 6-in. gauge, and 793 miles of 2-ft. gauge.

Much has been done since 1945 to restore services and amenities to the travelling public. The "Blue Train" resumed operation between Pretoria and Cape Town in February, 1946. A general acceleration of passenger services is being undertaken, and as a preliminary measure to further developments in this respect, test trains with a dynamometer car have been run between several of the larger centres of the Union. The report records the decision to equip future suburban rolling stock with fluorescent lighting, and the taking in hand of arrangements to provide fluorescent lighting in the dining and lounge cars of the "Blue Train." A total of 62 new steam locomotives was received from the United Kingdom during 1945-46, comprising 46 of Class "15F," 11 of Class "19D," and five Garratt locomotives of Class "GEA." The arrival of eight electric locomotives from Great Britain brought the administration's stock up to 188 units (including one battery shunting engine).

The new line between Oogies and Van Dyks Drift (20 miles) was opened on June 1, 1946, and a short connection, 35 ch. in length and mostly underground, was brought into use between Village Main and Faraday Street on June 4, 1945. The three-mile branch from Canada Junction to Phomolong was completed. The General Manager speaks with appreciation of the benefits gained from the investigations of the overseas mission, which, led by Mr. D. H. C. du Plessis, covered some 50,000 miles between March and September last year, visiting the United Kingdom, Holland, Belgium, Sweden, Switzerland, the United States of America, Canada, Argentina, and Brazil.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

American Passenger Equipment

Red Cottage,
Townsend Avenue, St. Albans. May 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I hesitate to ask again for your space, but "East Anglian," in the letter which you published on May 2, seems to have mis-read your article on the lightweight coaches of the New York Central System in the issue of April 25. These are composite vehicles, each with a large baggage compartment. They are not comparable, therefore, in respect of seating accommodation, with the L.M.S.R. coach mentioned by your correspondent.

Actually, the seat spacing in the recent American coaches is usually about 3 ft. 6 in., *i.e.*, two rows of seats in about 7 ft. Thus, the utilisation of floor space is much the same as in British practice. The advantage lies in the possibility of fitting adjustable seats with unobstructed leg room.

Yours faithfully,
W. R. D. MANNING

"The Commonsense of A.T.C."

G.W.R. Signal & Telegraph Engineer's Office,
Reading. May 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the issue of *The Railway Gazette* dated May 9 was an article from a correspondent entitled "The Commonsense of A.T.C.," which purported to suggest some developments of this company's system of automatic train control.

Some statements were made regarding the company's system which I think are misleading, and it is desirable that any such impression given should be corrected.

(i) The article states "the system (that is, G.W.R. system) is capable of adaptation to colour-light signalling, although it is not practicable to differentiate between the single yellow and the double yellow aspects." This is entirely incorrect, as a vote to alter the existing apparatus to work in multiple-aspect areas in which single and double yellow signals would be used was made at the last Board.

(ii) The article also states that the system we are proposing so as to give the third indication "has the disadvantage that unlike the existing system it requires a battery to be carried on the locomotive and involves more complications." The fact is that most of the existing apparatus on the locomotive carries a battery, so that this feature will be common to both the existing and the future modification. It is possible to eliminate the battery by using either the modified electro-mechanical apparatus or providing a generator on the locomotive.

(iii) The article suggests that the G.W.R. system be modified to provide for a full brake application at the stop signal. I should like to point out that there is nothing new in this proposal, as it was tried out as long ago as 1917 in the presence, I believe, of the Chief Inspecting Officer of Railways and others. Although the stop application was demonstrated to be practicable, it is evident that the proposal was not considered to be worth while pursuing at that time. There are many problems connected with such possible application and the question is not merely one of design of a device to be fitted to the engine, etc. To be effective the automatic stop application would require an appropriate overlap beyond the signal in which the train could be brought to rest before colliding with an obstruction. In practice, particularly at busy places, it would be impossible to provide such conditions except at the expense of considerably retarding traffic.

Yours truly,
A. W. WOODBRIDGE
Signal & Telegraph Engineer

Lime-Soda and Allied Water Treatment Processes for Railways

Old Bridge House,
Dogmersfield,
Basingstoke, Hants.
May 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I should like to be permitted to offer the following comments on Mr. Stead's letter, published in your issue of May 2.

Mr. Stead, who has had long experience in the supply of the chemicals necessary to operate the lime-soda process, together with proprietary brands of ancillary chemicals, briquettes, and compounds often used with it, records his conviction that the lime-soda process is capable of giving results and economies at least equal to those possible by the alternative base-exchange method. Yet he does not offer the evidence from the railways "in many parts of the world" on which he has had the experience which has led him to this conviction.

There is, however, evidence available from railways that have used both these processes, and have abandoned the lime-soda process, installing in its stead the base-exchange process, to prove that this newer process is more suitable and does give them better results.

Mr. Stead's statement that in the U.S.A. there were a few years ago 792 lime-soda plants, and only 69 base-exchange softeners, is rather like stating that there is more 50 year-old coaching stock circulating on railways than 17 year-old.

It is only some 17 years ago that the first base-exchange plant was installed on a railway, whereas numbers of lime-soda plants were working in the 1890s. The N.E.R. in this country was installing lime-soda plants 50 years ago. Some of the G.W.R. plants installed in 1910 are, I believe, still working, as also the 1890 plant erected at Derby.

Lime-soda softening is better than no softening at all. As I have been advocating constantly for over 15 years that all feed waters on any given locomotive section must be 100 per cent. softened to obtain proper results with any system of water treatment, Mr. Stead's suggestion that I should now claim that good results can be obtained under the conditions which, he states, exist on British railways of "about 60 per cent. treated and 40 per cent. untreated" cannot be meant seriously.

It was my impression that certain sections of British railways had in fact installed lime-soda and so-called "wayside treatment" plants, aimed at ensuring that at least certain classes of engines should receive treated water only. Should his statement that few, if any, British locomotives are supplied yet with 100 per cent. "correctly" treated water, be linked with one of the contentions in my paper, *i.e.*, the difficulty of ensuring continuity of operation with this type of plant? All railways having base-exchange softeners do get high continuity of operation—and work to a schedule of monthly washouts.

The answer to Mr. Stead's priming question is to be found in my paper in some detail. Mr. Stead's advice to prospective users is sound, and the investigation he suggests has in fact been

carried out by no fewer than 11 large railway companies, who, after first-hand working experience of lime-soda softeners, have decided to instal base-exchange softeners, and have continued to do so.

Yours faithfully,
A. J. WALTER

Paris in 14 Hours by S.E.R.

Hurst Wickham,
Sussex. May 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The advertisement of the South Eastern Railway of May 7, 1847, reproduced in your issue of May 9, cannot be accepted as accurate, so far as I can check it. . . . "The time is now as follows, by the South Eastern Railway from London Bridge to Folkestone 2¼ hours. By steamer from Folkestone to Boulogne 1¾ hours."

The railway at that time was *via* Redhill; the distance to Tonbridge was 41¼ miles; half way to Folkestone. A train 100 years ago would need to stop for water; here the engine might be changed for another already with a full supply of water. This stop would require about 4 minutes for making the stop, 4 minutes for changing engines (or taking a fresh supply of water), and 4 minutes before reaching highest speed.

From Tonbridge to Folkestone Harbour is 42 miles 43 chains, a total distance of 84 miles 03 ch. from London Bridge. The allowances for time lost are—Tonbridge, slowing, 4 min., changing engine, or taking water, 4 min., regaining speed 4 min.—total 12 min.; average speed 40 miles an hour. Folkestone Harbour Station 42 m. 63 ch. from Tonbridge. Slowing for Folkestone 4 min., slow speed over about 200 yards of branch, detaching engine, and attaching branch engine and brake trucks at the now front of train, for about ¼ mile to stop in Harbour Station, 14 min. Speed for the whole distance 84 miles 03 ch. at 40 miles an hour, 2 hr. 6 min. Time lost as set out above 26 min.; total time on journey 2 hr. 32 min. The S.E.R. advertisement allowance is 2 hr. 15 min.

The Harbour Station in fact was the station for the town of Folkestone; the station named Folkestone was in 1847, and for 30 years or so after, then some distance east of the town.

With regard to the Channel packet of 1847 covering the 29 miles to Boulogne in 1 hr. 45 min., it is quite unlikely a paddle steamer could do the crossing in that time—that is, over 16 miles an hour, even in a fair sea and a following strong wind.

Finally, no allowance has been made of the time spent in passengers and luggage transferred from the train to the steamer at Folkestone Harbour; probably about 15 min. but included in the 1¾ hours.

Yours faithfully,
G. A. SEKON

Tube Train Destination Boards

The University of Liverpool,
Metallurgical Society,
Metallurgy Department,
Brownlow Street, Liverpool, 3. May 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I see no need for additional destination indicators on the tube trains, for several reasons:—

(1) The services are so frequent that unless it is a matter of life and death, it does no harm to look at the station indicator, even if it means missing the train in the station.

(2) If a passenger does get on a train going the wrong way, it only takes to the next stop to find out, and little time is lost in retracing one's steps.

(3) In the particular case quoted by "Commuter" it is quite easy to get out at the first station, look at the station indicator, and then either get in the train again or wait for the next train.

Therefore, I do not think the extra cost of installation, and use of labour, in changing any additional indicators on the trains, is justifiable or necessary.

Yours faithfully,
J. EDWARD ROBERTS

London Passenger Transport Board,
55, Broadway, Westminster,
London, S.W.1. May 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In reply to "Commuter's" and "Fellow Commuter's" letters appearing in recent issues of *The Railway Gazette*, suggesting improvements in Underground train destination boards, it is pointed out that London Transport's present policy is in favour of the illuminated platform destination sign in preference to any other type of sign.

As "Fellow Commuter" points out, the necessity of having destination boards on both sides of each car, where station platforms alternate on each side of trains, does not facilitate the changing of destination signs, as they would be facing the tube wall and would be completely inaccessible. On the District and Metropolitan lines it is possible to affix destination boards to both sides of each car, but on other lines this method is out of the question and the London Transport policy therefore applies.

As regards the maps inside carriages on the Bakerloo line from Charing Cross to either Watford or Stanmore, it is not deemed advisable to alter these because of the diversion of trains to either line.

Yours faithfully,
J. H. BREBNER,
Chief Public Relations & Publicity Officer

Publications Received

Oxy-Acetylene Welding Handbook. By L. J. Tibbenham, M.I.Mech.E. Stowmarket: Suffolk Iron Foundry (1920) Limited. 7¼ in. × 4¾ in. 208 pp. 227 illustrations. Cloth boards. Price 5s.—This is a useful and essentially practical handbook for the welding operator who desires to improve his technique, to acquire valuable new "wrinkles," or to widen the scope of his work. It should also be of great use to foremen and supervisors in a general engineering works who wish to learn the basic principles of welding from the workshop viewpoint. It is a handy and attractively produced volume, and is written in a simple, unaffected style which enables the subject matter to be understood quickly and remembered easily. Interest is increased by presenting many sections as a personal narrative. Of special interest is the chapter on "Locomotive Welding Repairs," which covers a wide range of items from both steam and diesel locomotives. Road motor vehicles naturally figure largely in the book, but other fields of engineering—agricultural, hydraulic, marine, and structural—also are covered. There are chapters, too, on the welding of cast-iron, aluminium, zinc, and stainless steel. The use of jigs and manipulators is given due prominence. The theoretical and research aspects of welding, with test data relating to mechanical and physical properties, are confined to the two concluding chapters, and are given with a strict eye to their usefulness to practical men.

Oil-Burning Locomotive. By R. J. Eaton. London: Transportation Press Limited, Tudor Chambers, River Park Road, N.22. 8½ in. × 4½ in. 31 pp. Illustrated. Paper covers. Price 2s.—This booklet offers the reader a wider appreciation of the subject of oil-burning locomotives, in dealing with such matters as the composition, refining, volatility, and calorific value of oil. How oil fuel is used, the equipment necessary for locomotive and tender, principal new duties of the fireman, and the lighting-up procedure are all explained in straightforward terms. Various drawings show the layout of the equipment for oil burning in the locomotive, and also the layout of an oil refuelling depot.

One Hundred Years of Swiss Railways. Berne, 1947: Published by the Publicity Office of the Swiss Federal Railways.—In connection with the centenary on August 9 of opening the railway from Zurich to Baden, the Swiss Federal Railways have published an illustrated programme of the numerous exhibitions and events arranged to celebrate the occasion. A full-scale model of the original train has begun already to make a tour of the country, giving short trips from numerous centres, to which cheap tickets are being issued from within a certain radius. An exhibition of models, also, is touring the country, and the programme contains an essay on the popularity and extent of the model railway hobby in Switzerland. Another exhibition, entitled "Youth and the Railways," includes examples of drawings of railway subjects by Swiss schoolchildren who won prizes in a competition organised last year by Swiss education and transport institutions. The booklet also gives a full programme of the centenary celebrations to take place at Baden and Zurich on August 9, and refers to numerous conducted visits and lectures.

The British Isles.—Although allowing no more than a quick glance at the many beauty spots and places of historic interest in this country, this new pocket guide published by the British Travel Association should achieve its object of awakening within the reader a desire to explore the British scene, because it is written in a very readable style, and the narrative is accompanied by more than 150 excellent photographs from all parts of England, Scotland, Wales, and Northern Ireland. In due course, four editions of this booklet will be issued, written in English, French, Spanish, and Portuguese.

XUM

The Scrap Heap

"A State-owned train—drawn by a State-owned engine—and burning State-owned coal! And filled with civil servants, travelling on Government passes, and bound for a State-owned site to plan the building of a new Ministry! Oh boy, oh boy! How far are we now from Utopia?"—"*Dogberry*" *in the* "*News Chronicle*."

* * *

Ignorance is Bliss

Many of us go from infancy to age without coming across the blockheaded credulity that some people, such as social workers, encounter. One tells me that in his district he finds a belief that when the railways are nationalised travel will be free. I can credit this, after the coal merchant who told me about the woman who remarked: "This is the last time I'll be paying you, now that the mines belong to us."—*From London Letter in the* "*Liverpool Daily Post*."

* * *

The Loch Ness Monster

That Loch Ness monster has come back into the news columns and in a very much rehabilitated and restored condition. Its existence has been officially recognised by the Inverness County Council, which suspended its standing orders while the county clerk gave a first-hand description of how he saw the monster on Good Friday; at the end of which Sir D. W. Cameron, Convenor of Inverness, said that he was "now convinced of the monster's existence. There could be no more trustworthy witness than the county clerk."—*From* "*The Manchester Guardian*."

* * *

Station Protest as 800 Civil Servants Leave Llandudno

A few minutes before the departure of a train carrying 800 Civil Servants back to London from Llandudno, their wartime home, a procession headed by a banner "We demand to return to our homes" marched into the crowded station.

The officials leaving were employed in the Estate Duty office of the Inland Revenue Department. The demonstrators belonged to other departments and in a meeting held just before the train left they passed a resolution that:

"The remaining staffs of the Inland Revenue affirm their determined resolution to achieve the return of the entire staff to London before consideration of any further dispersal of the staff."—*From the* "*Evening Standard*."

* * *

Clearing the Lines

Lovesick crows, owls with their prey, squirrels, and even white horses from the Firth of Forth are among the numerous "animals" which can cause trouble for those who keep our electricity lines in order, according to a talk given to Edinburgh City Business Club by Mr. C. H. A. Collyns, of the Lothian Electric Power Company.

Birds, perching on or near insulators, caused so many shorts that little perches had been provided on the insulators. Crows in love alighted on separate wires, pecked at each other, and went up in smoke. Squirrels had caused shorts with fatal results to themselves. An owl which had killed a rabbit carried it up a pole and laid it across an insulator, and had it roasted.

The spume from white horses, lifted by high winds from the Forth, was carried up to eight miles inland and deposited on insulators, causing shorts which did not occur until the stowstorms, and added greatly to the problems of the maintenance men.—*From* "*The Scotsman*."

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *May* 22, 1847

ASCOT RACES.—GREAT WESTERN RAILWAY.—NOTICE is hereby given, that on TUESDAY, the 1st June, and on THURSDAY, the 3rd June, SPECIAL TRAINS will RUN between Paddington and Slough for the convenience of parties attending Ascot Races. Additional booking offices will be opened at Paddington; and, in order to prevent as far as possible the inconvenience experienced in endeavouring to procure tickets during the crowded state of the booking offices, the Directors have determined to issue first and second-class tickets at the Paddington Station for any or all of the race-days upon any previous evening, the holders of which, upon showing them, will be admitted to the platform through the iron carriage-gates without having to pass through the booking offices. Tickets so taken will not require to be stamped on the return journey, but merely shown on entering the trains. These tickets can also be obtained on application at the Railway Office, No. 449, West Strand; 29, Gresham-street, Bank; and at Messrs. Tattersall's, Grosvenor-place, Hyde Park-corner, on Monday and the subsequent days.

Persons wishing to send carriages or horses to Slough or Maidenhead, for Ascot Races, must make early application at the Railway Stations, to secure a truck or horse-box for that purpose.

Hand-bills, giving full particulars of the trains, &c., will be issued, and may be obtained at the Railway Offices, on and after Wednesday, the 19th May.

By order of the Directors,
CHAS. A. SAUNDERS, Secretary.

Paddington, May 17, 1847.

ASCOT RACES.—Mr. DYSON, of WINDSOR, Contractor for the Omnibuses to and from the Slough Station of the Great Western Railway, begs to inform the public that he has arranged for the plentiful supply of well-appointed OMNIBUSES to coach from the SLOUGH STATION to ASCOT and BACK on the Four Race Days.

These omnibuses will be conveniently placed in the station-yard, with the sanction of the Railway Company, ready to start for the Course on the arrival of the several trains. They will be conspicuously marked with Mr. Dyson's name, and numbered, so that gentlemen may easily recognise in the afternoon the vehicles that conveyed them in the morning. All the omnibuses will leave the Course a quarter of an hour after the last race on each day.

The fare will be 10s. for the journey from Slough to Ascot and back.

* * *

Sir Francis Dunnell

Sir Francis Dunnell, first baronet, is emigrating to Kenya. He fears that life in England in the next few years will not keep him busy enough at his age. He is 78 years of age.

Retirement, 19 years ago, from his job as the L.N.E.R.'s Chief Legal Adviser added to his interests. Member of half a score of committees, J.P. in two counties, Quarter Sessions Chairman. . . .

"But now?" he said, "You know, a Royal Commission is sitting on magisterial matters. "I'm pretty sure they'll recommend 75 as an age limit. I'm not waiting to be told to go.

"Then, the Transport Bill . . .I wonder if the Railway & Canal Commission will go on?"

[Sir Francis has been a Commissioner for 17 years.]

"After all these years," he said. "I shall have nothing to do."

A friend flew to Kenya to find a house for him. "Think of it," he said. "There's 17 days' racing a season, plenty of cricket and polo to watch. I'm going in August or September."—*From the* "*Daily Express*."

* * *

P.O. Bank Frauds

Totals of fraudulent withdrawals from Post Office Savings Bank accounts in the past five years were approximately: 1942, £41,700; 1943, £31,000; 1944, £27,600; 1945, £35,300; and 1946, £72,300, says the Postmaster-General in a written Parliamentary answer.

* * *

Great Southern & Western Railway

"The largest train," says the *Irish Railway Gazette*, "that has started on this line since its opening, was on Wednesday last, for the purpose of conveying parties to the steeple chase at Lucan. There were twenty-three carriages, conveying 1,500 passengers."—*From* "*The Railway Times*," *May* 15, 1847.

* * *

Jackpot

A traveller on the District Line of London Transport placed 1½d. into a ticket machine at Cannon Street. No ticket was forthcoming, and the man joined a queue at the ticket office. Suddenly there was a loud whirring from the machine, and a shower of tickets began to gush forth. After about 100 tickets had fallen, a station official quietened the machine.—*John Carpenter in* "*The Evening News*."

* * *

Engine Names

If the railways are nationalised it will be interesting to see if the Government overhaul the system of locomotive nomenclature. They might either abolish names altogether, as a gesture in favour of the classless State, or they might reward Trade Union leaders by creating eponymous engines.

Fortunately there are still a large number of locomotives proudly equipped with names. In a knowledgeable little treatise called "Locomotives of the L.N.E.R.," which the L.N.E.R. have just published there is an appendix which ought to fascinate small boys. This consists of a list of all the named engines on the system.

The L.N.E.R. must be the most impressive idolater of Sir Walter Scott in existence. The number of their engines which carry the names of Scott characters is formidable. It runs to about 60, including a locomotive called *Sir Walter Scott*.

Of the non-Scott engines, the most appealing is a monster called *Humorist*. How pleasant it must be to be taken for a ride by this wag.—*From* "*The Scotsman*."

LONDON LAUGHS (No. 3,873) *By LEE*

"It's a little idea of somebody's to let us know the unofficial strike position at a glance"

[*From* "*The Evening News*"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Financial Position

The operation of the railway, harbour, steamship, airways and aerodromes services for January this year resulted in a surplus of £472,161. Revenue totalled £6,610,676, and included improved receipts from goods and coal traffic, and harbour dues and services. Expenditure, excluding net revenue appropriations, amounted to £6,096,049, and was influenced by the higher maintenance and operating costs consequent on increased traffic, and additional payments in respect of interest and cost-of-living allowance. The accumulated surplus for the period April, 1946, to January, 1947, was £496,266.

Unskilled Rail Workers

The introduction of a wage scale applicable both to married and single adult rail workers at the rate of 10s. 6d. a day on joining, 11s. a day after 12 months, and 11s. 6d. a day after a further 12 months, is recommended in the report of the committee appointed to investigate the employment of unskilled European workers in the railway service. This report was recently tabled in the House.

The maintenance of an adequate establishment of training officers is recommended, and it is suggested that gangs of workers employed on track maintenance should be located at centres where school facilities and social amenities are available. The report also recommends the lifting of existing restrictions on the promotion of unskilled workers to graded positions, so as to enable them to compete on merit with other servants now eligible for promotion to such positions. It is proposed that suitable workers should be permitted to enter for departmental examinations, and to qualify for higher grades.

PALESTINE

Passenger Train Wrecked by Mine

What is regarded as the worst act of sabotage to date against the Palestine Railways took place at 8.30 a.m. on April 22, when, as recorded briefly in *The Railway Gazette* of April 25, the Cairo-Haifa passenger train was blown up by a mine 11 km. south of Lydda Junction. The mine, which obviously was larger than usual, was detonated electrically from adjacent groves, and, in spite of the early arrival of troops and police, no trace of the saboteurs was found. The normal dawn foot patrols of the Engineering Branch had failed to detect the mine, and a goods train had passed over the section a short time before.

The train was composed of five coaches (military portion); and restaurant car, four coaches, and passenger brake (civilian portion). The explosion took place under the military composite coach, which was marshalled fourth from the engine. This coach sustained severe damage, and five soldiers were killed therein. The engine and five coaches broke away, and the fourth and fifth coaches were derailed and partly overturned. Severe telescoping took place towards the rear of the train, and the sleeping car was badly wrecked. The Wagons-Lits restaurant car cook was trapped in the kitchen, and not released until three hours later. But for the fact that passengers were few, casualties doubtless would have been severe. Ten rail-lengths of track were blown out or torn up.

In all, eight passengers were killed, six seriously injured, and numerous minor injuries, especially amongst troops, were reported. Casualties were removed quickly by Army ambulances, and a relief train took through passengers forward. Salvage operations were begun immediately, and proceeded until dusk, when work was suspended in case of further attacks on cranes and breakdown equipment. The line was cleared eventually at 10 a.m. the next day.

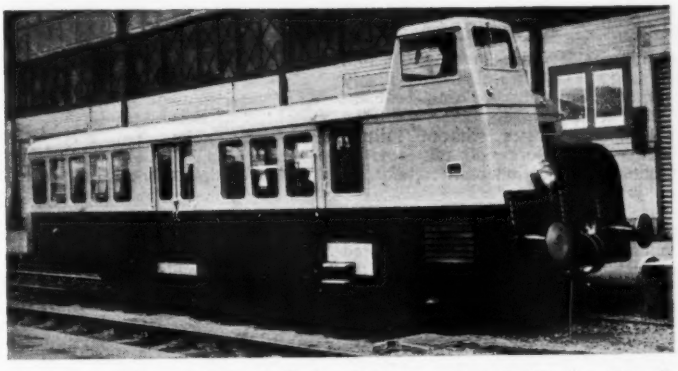
Railway employees in Palestine are perturbed at this wanton act, which has increased the apprehensions of running staff and added generally to the tenseness of the situation.

FRANCE

Light Railcar for Secondary Lines

A new type of light railcar for use on secondary lines will be placed in service shortly by the French National Railways.

S.N.C.F. Railcar for Secondary Services



Panhard 80-h.p. vehicle built to designs prepared by the French National Federation of Railwaymen

It is known as the F.N.C. railcar, having been designed by the Fédération Nationale des Cheminots (National Federation of Railwaymen). With an overall length of 40 ft., it accommodates 72 passengers, 47 seated and 25 standing. The car has a centre corridor and a central entrance vestibule measuring 8 ft. 9 in. by 7 ft. 6 in. There is a separate luggage compartment, of 1 ton capacity, and a lavatory compartment. The car is driven by a Panhard 80-h.p. engine, giving a speed of 45 m.p.h., and has an operating range of 250 miles. Satisfactory trials were run recently on the suburban line between Paris and Chars.

New Type of Engine Shed

The French National Railways have developed a new type of roundhouse engine shed. In this pattern there are 48 spurs, radiating from a turntable of 88 ft. dia., and equipped with 98-ft. pits. The total diameter of the building is 473 ft. The roof is a monolithic shell structure of reinforced concrete, supported by V-shape pillars of the same material. Prefabricated concrete elements are used to form the outer walls, in which there is ample room with plenty of window space so as to compensate for the absence of skylights, which have been eliminated deliberately because of cleaning difficulties.

The outer walls are non-bearing, so that any of the spurs can be extended simply by taking out the corresponding part of the wall, without further structural alterations. Every spur is equipped with a smoke duct, through which the engine smoke and gases are evacuated from the building. On account of the standardisation and prefabrication of many building elements, the roundhouse can be erected comparatively quickly and cheaply.

BURMA

Coal Supplies Improved

Normal suburban services were resumed in March in consequence of an improvement in coal supplies. As recorded in *The Railway Gazette* of May 2, severe restrictions on local trains were necessary as a result of the coal shortage on February 10. The booking of public goods traffic, cancelled during February, has been permitted since March 6.

Derailment Near Pyinyaung

On March 7 No. 62 down train was derailed deliberately near Pyinyaung on the Kalaw branch and was fired on by dacoits; 29 persons were killed and six injured. Traffic was limited to one mixed train on the branch in each direction every two days accompanied by a strong escort. It is hoped that intensive police and military action against dacoits in the area will permit normal services to be restored shortly, as the existing trains are inadequate to carry all the traffic offering.

Southern Shan States Line

A daily service was restored between Thazi and Heho on May 5, after a reduction to one mixed train running each way three times a week which followed an armed attack on a down train near Pyinyaung Station on March 7. As recorded in *The Railway Gazette* of March 21, the portion of the Southern Shan States line between Pyinyaung and Heho, was reopened for traffic on January 15.

Attacks by dacoits are having a serious effect on the operation of the railway, and are occurring on almost all sections of the system except those in the Delta. As a result, it has been found necessary to close some stations temporarily; other stations are opened only during daylight.

Welded Carriage-Underframes, L.M.S.R.*

An account of the present state of development, with a note on future trends

THE arc-welded carriage frame was developed on the L.M.S.R. under Sir William Stanier, when Chief Mechanical Engineer, and the first example of this type of carriage construction was completed at Derby in May, 1934; it has been described by Dr. Henderson in his paper to the Institution of Civil Engineers.†

The advent of welding brought promise of considerable advantage to the designer, and, as is usual in such cases, pitfalls for the unwary. The advantages arose from the comparative simplicity with which strong joints could be formed without the necessity of weakening members by drilling for rivets or bolts, and consequently with the elimination of angle knees and reduction, or even elimination in some cases, of gussets.

The joints thus produced by welding are also more rigid than any but the most carefully designed and executed riveted joints. A further important advantage is that metal can be replaced readily wherever stress considerations make it necessary, thus facilitating the reinforcement of local weaknesses. Comparatively complicated shapes can be fabricated readily without excessive weight, from rolled sections and bars of ordinary structural steel.

The main pitfalls are in the first instance that the designer may forget that welding is not cheap, and produce these complicated shapes in his structures without giving due consideration to the cost; and, second, that the weld seam carries a highly concentrated load and care must be exercised that the members can withstand these localised stresses without failure. The danger of failures of this kind is accentuated by the inherent rigidity of welded joints.

In the first welded frame it was decided to avoid a revolutionary change in general design and to follow the lines of the riveted frame, seeking reduction of weight by the reduction of sections where justified by the elimination of rivet holes and angle knees.

Lapped Joints Avoided

Diagonal tie bars were further curtailed, and the opportunity was taken to avoid lapped joints where possible. A number of subsidiary members were reduced in thickness by $\frac{1}{8}$ in. and the main truss, in three sections welded together, is of 3 in. × 3 in. × $\frac{1}{2}$ in. angle instead of 3$\frac{1}{2}$ in. × 3$\frac{1}{2}$ in. × $\frac{1}{2}$ in. This frame is wider than the corresponding riveted frame, because the design of the body requires the pillars to be supported directly on the top solebar flange. This flange had to be cut away at door positions, and the reinforcing plates at the back of the solebars illustrate one of the facilities offered by this method of fabrication. Again, in the buffer corner, the steel casting of the previous frame is replaced by a system of plates arc-welded into an extremely robust framework.

This design gave a very clean finish to the frame and presented a flush top surface for the reception of the floor which was welded directly to it. As it was a prototype, it was fabricated entirely without jigs or fixtures, careful procedure being relied on to avoid distortion. This was completely successful, and the frame when finished was as square and level as a riveted frame. The weight of the finished frame (with equipment) was 11 tons 13$\frac{1}{2}$ cwt. A comparable riveted frame weighed 12 tons 6$\frac{1}{2}$ cwt., so the saving in weight due to welding was 13 cwt.

In 1937, a welded frame was designed for a corridor third brake, the prototype of a number for saloon sets for excursion traffic. The centre truss was of N-girder construction and an extremely light solebar combined with a strongly reinforced frame was arranged between the headstocks and bolsters. The centre truss had top members of 3$\frac{1}{2}$ in. × 2 in. × 6·75 lb. channel and bottom members of 2$\frac{1}{2}$ in. × 2$\frac{1}{2}$ in. × $\frac{1}{2}$ in. angle, and the centre ties were of 1 in. × 1 in. × $\frac{1}{4}$ in. angle. The solebars were 5 in. × 3$\frac{1}{2}$ in. × $\frac{3}{8}$ in. angle.

There were few heavy channels in the structure, and the bolsters and headstocks were fabricated from plate. The plates which made up the buffer corner were not dimensioned on the basis of the parts of the original steel casting, but were reduced to $\frac{1}{2}$ in. for the gussets and $\frac{7}{8}$ in. for the "trimmer." To compensate for the reduction in rigidity of the gusset edges, they were flanged, and it was estimated that the finished corner was equal in strength to the original steel casting, with a reduction in weight of no less than 42$\frac{1}{2}$ per cent.

The solebar was reinforced in two planes between the headstock and bolster, to assist in resisting buffing shocks, by the addition of a second section of 5 in. × 3$\frac{1}{2}$ in. × $\frac{3}{8}$ in. angle welded beneath it, and a length of 6 in. × 3 in. × $\frac{3}{8}$ in. angle inside the frame. This was the first experience on the L.M.S.R. of the use of low-alloy high-tensile steels welded into vehicle frames. This material, of the carbon-manganese type, was used for the solebars only, which were regarded as the most highly stressed members. In the endeavour to reduce weight, by eliminating as much unnecessary material as possible, the designer increased the number of welded joints and the total length of welding to an extent which now would be regarded as economically questionable.

A frame for one section of a light, articulated diesel unit (1938) is of interest, as it is a true cantilever frame; the whole load is carried by the trussed centre longitudinals, and the solebars unsupported by the side framing. Here again all the members are reduced to the limit; the solebars are of 5 in. × 3 in. × $\frac{7}{16}$ in. angle; no shunting shocks had to be allowed for, so the reduction was justifiable. The frame was welded in low-alloy high-tensile steel.

Wirral Electric Stock

In the frames for the Wirral electric-stock, also in low-alloy high-tensile steel, there is no diagonal bracing, the steel floor sheeting and the intrinsic rigidity of the welded joints alone providing sufficient stiffness. The headstock is fabricated from $\frac{1}{2}$-in. plate and reinforced at the buffer corners by gussets. The drawbar pull is taken on the headstock assembly, suitably reinforced, instead of on the bolsters, as in main-line stock, thus making the drawgear more accessible.

In the underframe now used for standard main-line stock, the amount of welding has been reduced by omitting diagonal braces, and reducing the number and size of gussets. Many gussets are fixed by intermittent welding, and the edges are slotted or notched out where welding is not required, to prevent moisture being held in the open joints and causing corrosion. The assembly and welding of the underframe is split into sub-assemblies, their extent depending on control of distortion, ease of welding, and reduction in handling; allowance is made for contraction on the joints. Both jigs and jig manipulators are used. First, the stiffeners on the headstocks are welded as a sub-assembly, as this affords downhand welding.

The solebars are then cambered in a press; $\frac{1}{4}$ in. is allowed to compensate for loss of camber during welding. Then the truss bars are jig-assembled and welded to the solebars. The cross-frames, cross-bars, and buffer trimmers are welded as sub-assemblies in jig-manipulators. The main assembly is done with the frame upside down in the jig; and assembly is completed at this stage. The welding is carried out by four operators, two to each end of the frame, working towards the centre.

All downhand or horizontal welds are then made. The frame is then rigid enough to withstand lifting to another welding station, where it is turned to normal position. After outstanding downhand and horizontal welds have been made, the frame is turned first on one side and then on the other, to allow completion of the welding in the downhand position.

Advantages of Standard Framing

In considering future trends, it must be remarked that the general lines of design of the frames used on L.M.S.R. coaching stock have remained unchanged for many years, in spite of readiness to break new ground. There are, however, certain virtues in the standard framing which make it difficult to supersede for general use.

It is simple to fabricate, and therefore inexpensive in labour; it is robust, and the same frame can be used readily for varying types of body. Standardisation of frame design has reduced drawing-office work, assisted bulk ordering of material, and saved constant changing of jigs in workshops. These advantages will not be abandoned lightly. Some saving in weight may be achieved by individual design of frames for coaches, but its value is unlikely to balance the cost except in very special types of vehicles—possibly electric and diesel traction vehicles on intensive service. This appears to be part of the answer to criticism of the continuance of the separate underframe, though that is not to say that, apart from the special vehicles mentioned, no changes in frame design can be expected; but probably they will depend on changes of conditions which have not yet occurred. If railway operation changes so as to eliminate severe buffing shocks, for instance, or if central auto-couplers become standard, quite fundamental changes in design may be expected. There is also the possibility of new materials affecting design. If costs of fabrication increased to a great extent, it may become economically worth while to turn to quite expensive materials such as the light alloys which facilitate fabrication.

Some Points from the Discussion

Mr. W. S. Graff-Baker pointed out that although welding might be cheap if only a few assemblies were needed, steel castings probably would effect a saving where thousands were required. Weight saving eventually had to be related to capital cost; at present London Transport could incur a capital cost (based on a 30 years'

* Paper by A. N. Moon, B.Sc. (Eng.), A.M.I.Loco.E., and G. Foster, B.Sc., read before the Institution of Locomotive Engineers on February 19, 1947. Abridged

† Jl. Inst. C.E., 1935-6, vol. 3, p. 321

life) of 1s. 9d. to save 1 lb. in weight. The "stressed structure" vehicle offered advantages over the trussed underframe type; it was lighter than anything which could be achieved with separate bodies. Underframes with central longitudinals were especially favourable to centre buffing loads and centre drawgear; recent United States specifications required test loads of 400,000 lb. at solebar level. He thought that low-tensile light alloys had advantages over high-tensile types in obliging designers to use heavier scantlings, which gave security against heavy impact.

Sir William Stanier referred to troubles experienced in welding ships in America, due to the welders starting at the ends and working towards the centre, where all the stresses became locked up. To start welding underframes at the ends, and to work towards the centre, might also give rise to stresses which should not be locked up; this might explain occasional failures which had occurred. The Traffic Department liked to have doors to each compartment in a coach, but that greatly reduced the body strength and compelled one to depend on the underframe.

Mr. L. Lynes said that the abandonment of the adjustable truss for the riveted angle truss was due to Mr. G. H. Pearson, carriage and wagon manager at Swindon 35 years ago. He preferred continuous members to welded trusses, which, in relieving the solebars of their major stresses were themselves loaded sometimes to 8-10 tons per sq. in. Carriage frames today were weak, outside the bolster centres, in both vertical and horizontal planes. The only way to get a really good frame was to abandon side buffers for centre buffers, so that the load could be taken properly.

Mr. T. Henry Turner also said that the centre coupling must come; and with it, all the troubles with welded corners would vanish. If a change from mild steel were contemplated, stainless steels and aluminium alloys deserved consideration, as they would require larger cross-sections in which the neutral axis would be further from the skin of the metal.

Mr. M. A. Crane pointed out that riveted frames had advantages in the ease of repair and replacement of members and cited a case of damage, in transit, to welded underframes, exported from the United States to South America, which was very difficult to put right when assembling the vehicles at their destination.

Reply to Discussion

Mr. G. Foster, in reply to Mr. Graft-Baker, said that in dealing with steel castings, machining costs must not be forgotten; fabrications for underframes were made from "black" plate and were finished to size without machining. In reply to Sir William Stanier, if most of the joints were made in the length of the frame, it would be a serious mistake to start welding at the ends and work inwards; but as the main contraction would be *across* the frame (in which the contraction was very small), and not in its length, no high stresses could be left locked up in the frame. He did not think Mr. Lynes had cause for alarm at the welding of the separate members of the trusses. The welded joints in trusses were backed with gusset plates and probably were stronger than the members forming the truss.

In reply to Mr. Turner, the use of aluminium alloys was conjectural; if adopted it would be necessary to go outside railway workshops to secure all the facilities required for their fabrication. In reply to Mr. Crane, there had not been any need yet for general repairs to any welded underframes. If a frame were damaged, for example, in a collision, they cut through a member to allow it to be straightened, and re-welded afterwards. With suitable welding procedure, the requisite strength could be ensured at the weld, and the correct shape of the frame could be maintained.

G.W.R. Developments in Maintenance Equipment—6*

Draining water from embankments and cuttings

THE Duff Norton pipe forcing jack, marketed by the Consolidated Pneumatic Tool Co. Ltd., of 232, Dawes Road, London, S.W.6, is shown fitted to a 2⅜-in. outside dia. steel pipe, which is being

Driving a 2⅜-in. pipe into an embankment by means of the Duff Norton jack

driven into an embankment for the purpose of drawing off water to prevent or minimise the development of a slip. Pipes are supplied in 5-ft. lengths, and screw-coupled; the leading pipe is perforated and fitted with a removable "torpedo" head.

The usual procedure is to aim the pipe from a point fairly high up the bank towards the direction in which a water pocket is thought to exist; if water is located, it will drain off through the open end of the pipe at the jack. In order to use the pipe elsewhere, it can be withdrawn by reversing the jack, and a smaller pipe inserted to drain off the water for as long as may be necessary. In the event of water not being located at the first attempt, or the flow drying up, the pipe is inserted further down the bank.

Alternatively, a shaft can be sunk in the side of the embankment to form a sump, the pipe driven into it from outside and an old perforated bucket placed round the end of the pipe before the shaft is backfilled with hardcore.

* Previous articles in this series appeared in our issues of April 4, April 25, May 2, May 9, and May 16

RAILWAY BENEVOLENT INSTITUTION.—The eighty-ninth annual meeting of the Railway Benevolent Institution will be held at the Charing Cross Hotel, London, W.C.2, on June 27, at 4 p.m., to confirm the minutes of the special meeting held on June 28, 1946, receive the report of the board of management, and transact the ordinary business of the Institution. The board will appoint to contingent annuities 36 widows and 6 members in the Officers' Department, and 610 widows and 189 members in the Servants' Department, being applicants in excess of the number to whom permanent annuities can be granted. There will be no ballot on this occasion.

NEW HOPPER BARGES FOR G.W.R.—The G.W.R. has placed an order with Charles Hill & Sons Limited, of Bristol, for two new steam hopper barges for use at the company's South Wales ports. The barges are of the single-screw self-propelled hopper type. They are 175 ft. long, have a breadth of 34 ft., a moulded depth of 15 ft. 3 in., and a mean draft of 13 ft. 2 in. The hopper capacity is 900 cu. yd. The barges are propelled by a triple expansion engine with h.p. cylinders of 15 in. dia., m.p. of 24 in. dia., and l.p. of 40 in. dia., with a 27-in. stroke. Steam is supplied by a three-furnace cylindrical coal-burning boiler working at 180 lb. per sq. in. The deck machinery consists of a powerful winch operating a drawbar for controlling the hopper doors, together with a powerful windlass and warping winch. Spacious accommodation is provided for the draft, the officers being berthed in separate cabins, and the crew in two-berth cabins.

SIR WILLIAM CHAMBERLAIN MEMORIAL SCHOLARSHIP AND GRANTS.—The council of the Institute of Transport has decided to make available immediately the benefits of the Sir William Chamberlain Memorial Trust, and announces that applications can be received from persons engaged, or intending to be engaged, in road transport within the North Western Region (defined as the counties of Lancashire, Cheshire, Cumberland, and Westmorland) for the award in August, 1947, of (i) one memorial scholarship of value not exceeding £50, and (ii) up to seven memorial grants not exceeding £10 each. Applications must be made on a form to be obtained from the Honorary Secretary, Sir William Chamberlain Memorial Advisory Committee, 55, Piccadilly, Manchester, 1. The completed form must be deposited not later than July 14, 1947, with the Institute of Transport, 15, Savoy Street, London, W.C.2. Each application must be supported by the candidate's employer or other responsible person having personal knowledge of him, and by a Member (M.Inst.T.) of the Institute, who, by personal contact, has had the opportunity to form an opinion of the suitability of his application. Further information may be obtained from the Secretary of the Institute.

Rectifiers for Main-Line Electrification

A new method of improving the characteristics of mercury-arc installations by auxiliary rectifiers for phase-doubling

THE "battle of the systems" may not have decided yet whether direct or alternating current shall be predominant in future main-line electrification, but British experience of suburban practice suggests that d.c. is applicable to all requirements for longer-distance operation. There seems no real reason why the suburban layout should not be employed, with obvious modifications, for main lines, particularly overseas projects. This entails generation at a few points, high-voltage a.c. feeders, and converting substations at intervals along the track.

Modern developments of the mercury-arc rectifier make it highly probable that mainly this converter will be used in the substations, because of its technical and economic advantages in comparison with rotating machinery. The advantages arise from its static nature, high efficiency, and slightly lower space requirements and capital cost. Hitherto, however, there have been suggestions that, in the special conditions of long-distance main-line schemes, certain characteristics of the rectifier might cause troubles with interference in adjacent communication systems, particularly telephones; and also, possibly, with instability in the supply system itself. Thanks to ingenuity and research, however, these suggestions no longer carry great weight, for it has proved possible to improve the inherent characteristics of the rectifier by comparatively simple and quite inexpensive means.

Mercury-Arc Characteristics

As is widely appreciated, a mercury-arc rectifier provides an automatic device whereby alternating currents are split up, so to speak, and resynthesised as direct current. It does this by emitting streams of electrons, or arcs, between suitable electrodes in an evacuated chamber; and the automatic changing over of these streams from one electrode to another involves the formation of a current waveform on the a.c. side which necessarily departs from the ideal sinusoidal waveform, and also produces ripples in the resulting d.c. voltage. The effects of the latter ripples can be readily eliminated, if desired, by the use of tuned filters (or resonant shunts), but the distorted a.c. waveform can be improved only by the use of more complicated rectifiers. Thus, the simple 3-phase 3-electrode rectifier gave place at a comparatively early stage to the 6-electrode design, which in turn is operated usually by means of special transformer connections, as a 12-phase converter.

Each multiplication of the number of phases reduces the resultant waveform distortion, or, as usually stated, reduces the harmonics present in the current taken by the rectifier. In 24-phase operation, the harmonics are diminished to a degree which virtually eliminates all harmful effects, both as regards telephone interference and possible resonance in the a.c. circuits.

Unfortunately, 12-electrode rectifiers, with which 24-phase operation normally would be possible, are comparatively difficult to manufacture, and involve their own special problems. But it has now been possible to devise a method whereby the ordinary 6-electrode rectifier, operating as a 12-phase converter, can be made to take a current waveform identical with 24-phase operation, by the aid of a small auxiliary rectifier connected to the interphase transformers necessary to permit 12-phase working. This patented method has been described recently by Dr. J. C. Read, of the British Thomson-Houston Co. Ltd., in a paper read before the Rugby Sub-Centre of the Institution of Electrical Engineers on "The Phase-doubled Twelve-Phase Connection." (See also our May 2 issue, page 434).

Provision for Phase-Doubling

The new arrangement consists essentially of a normal 12-phase rectifier equipment of the usual quadruple-zigzag or quadruple-star type, with the usual interphase transformers of one kind or another, but the interphase transformers are provided with four sets of secondary windings. If phase-doubled operation is required, these secondary windings are connected to four anodes of a small auxiliary rectifier in parallel with the main rectifier.

The auxiliary rectifier carries about 3½ per cent. of the total current, and by that small amount it reduces the load on the main rectifier. In practice, the auxiliary rectifier may be a small standard glass-bulb rectifier with only four of its six anodes in use, or even a dry-plate rectifier. It may be protected by the well-tried methods commonly used in high-power glass-bulb rectifier practice, but with the advantage of smaller prospective fault currents due to the smaller rating. The voltages for which it has to be designed are, of course, the same as for the main rectifier since it operates in parallel with the latter.

The theoretical waveform of the a.c. input current thus obtained is that of true 24-phase working, at all loads within the normal working range. As regards the theoretical waveform of the d.c. output voltage, this is true 24-phase at light load, but departs slightly from it at heavier loads. In practice, the waveforms on both sides are as close approximations to true 24-phase as are obtainable with any of the more usual 24-phase arrangements. The effects of the phase-doubled connection on the rectifier rating, circuit heating, efficiency, power factor, and d.c. voltage at full load, are all negligible. The inherent voltage regulation drop, *i.e.*, the regulation drop due to reactance and resistance in the equipment itself, is slightly increased, but this is offset partly by reduced regulation drop in the a.c. supply system; consequently the actual regulation drop in service, in the types of application for which this connection is most suitable, is hardly different from that of a normal 12-phase equipment. If the auxiliary rectifier is disconnected for any reason, the equipment reverts instantly to ordinary 12-phase working, with no other ill effects.

An important feature of the phase-doubled connection is that the extra apparatus required to produce the phase-doubling effect—slight though it is—need not necessarily be installed at the outset. Provided care be taken of certain elementary points in the design, it is possible to instal initially 12-phase equipments of the conventional types, and convert these to phase-doubled working later if the necessity for improved waveforms arises. It often happens that the prospects of disturbance being caused by harmonics on the a.c. side cannot be assessed fully in advance, on account of the possibility of subsequent extensions and other causes, and in such cases the facility for later conversion to phase-doubled 12-phase working provides a useful insurance.

The arrangement is not applicable where the main rectifier has its firing delayed by grids or ignitor phase-control, nor for inverted operation; and, while it is not particularly sensitive to distortions of the a.c. supply voltage, it requires—like any other system of increasing the number of phases of a rectifier equipment—a supply voltage that is reasonably sinusoidal and balanced.

The first installation of 12-phase rectifier equipments specially constructed to be suitable for possible later conversion to phase-doubled operation was made by the London Passenger Transport Board, as part of the boards's policy of encouraging new developments in rectifier practice.

If a 12-phase equipment not provided initially with secondary windings in the interphase transformers is to be converted to phase-doubling, this may be done by connecting auxiliary interphase transformers across the existing ones. In these arrangements the auxiliary interphase transformers have their main neutral points left disconnected, which reduces substantially the size of the auxiliary interphase transformers, since it prevents any of the main d.c. load current from flowing through them. It can be shown that all the current variations occur in the auxiliary interphase transformers, and apart from their magnetising current, the original interphase transformers carry only steady d.c.. If the auxiliary rectifier is of the dry-plate or single-anode type, advantage may be taken of this fact to effect a certain further slight simplification and reduction of size.

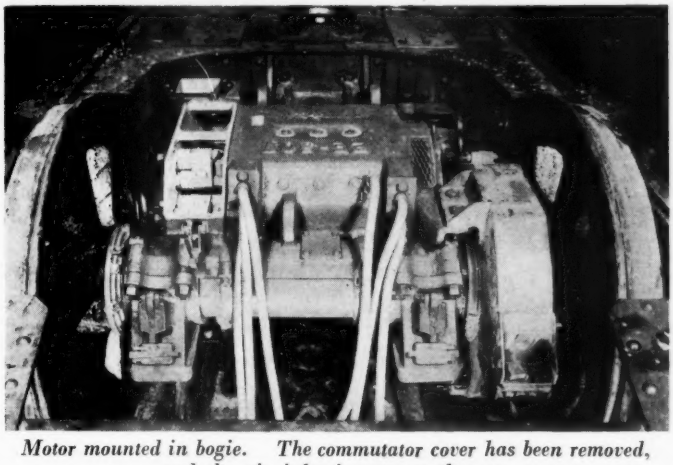
Meeting Overseas Conditions

The necessity for such a high degree of harmonic reduction does not arise normally in rectifier installations for suburban electrifications because such lines usually draw their energy from large interconnected electrical systems, on which the proportion of load handled by rectifiers is comparatively small. For industrial purposes, too, important rectifier installations frequently are so large that there is usually the possibility of securing good conditions in this respect by well-known methods. But particularly in such electrification schemes as are now contemplated in India and elsewhere overseas, the circumstances will be different. There will be lengthy and comparatively lightly-loaded cable or overhead line feeders, which are just the conditions to react to trouble with harmonics; hence, if mercury-arc rectifiers are to be used, the importance of Dr. Read's new method of connection will be obvious for our export prospects.

At the meeting of the Rugby Sub-Centre of the Institution of Electrical Engineers, to which reference has been made, the paper by Dr. Read was discussed at considerable length and in detail. Several representatives of the main-line railways and the London Passenger Transport Board took part in the discussion. A representative of the Southern Railway spoke of the long and satisfactory experience with mercury-arc rectifiers secured by that company over the past 15 years, and indicated that it was hoped and expected to double the electrified route-mileage of the company in the near future.

Southern Railway Lightweight Traction Motors

New ventilated type designed to combine the characteristics of existing suburban and express motors



Motor mounted in bogie. The commutator cover has been removed, and the air inlet is seen at the rear

FROM the introduction of d.c. traction on the L.S.W.R. in 1915 to the present time, it has been the policy of the Southern Railway to use totally-enclosed traction motors on electric multiple-unit stock. Though this type is larger and heavier than a ventilated motor, the policy was sound from an operating viewpoint; breakdowns have been rare, and maintenance costs light.

At the present time, however, higher accelerations and higher average and maximum train speeds are being envisaged, together with increased passenger loads. The continued increase in the numbers of electric vehicles, coupled with progressive improvements in traction motor design, have pointed to the advantages of adopting a lighter ventilated motor for suburban and express services. The most important advantages are a higher continuous motor output and less deadweight, facilitating higher acceleration, reducing energy consumption, and lessening mechanical stresses on bogie and track.

In anticipation of these needs, the development of a suitable motor was undertaken as opportunity offered during the war. After satisfactory preliminary tests, the first four of the new motors have been completed recently, and have entered suburban service on four-coach unit No. 4130.

Tapped Field Winding

The motors have tapped fields, and are so designed that on full field they reproduce the characteristics of the standard Type 339 suburban motor; the performance of the standard express motor, Type 163, is obtained with the weakened field. The new motors therefore can be used on either type of service, and their easy interchange will simplify maintenance procedure to a great extent, with consequent reduction in costs.

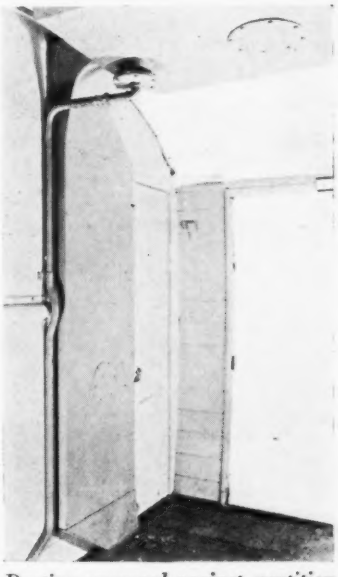
The appearance of the motor as mounted on the bogie is shown in the heading illustration; the fan is at the pinion end of the shaft. The commutator cover has been removed, and behind it, to the left, can be seen the air inlet flange. Six connecting leads are shown; the sixth lead (third from right) is the power circuit negative return connection to the motor frame.

The additional field cable thimble is housed for convenience in a dummy terminal in the motor connection box on the coach underframe; it is not the intention at the moment to add field tap contactors to the motor coach control gear. Comparative particulars of the three motors are given below:—

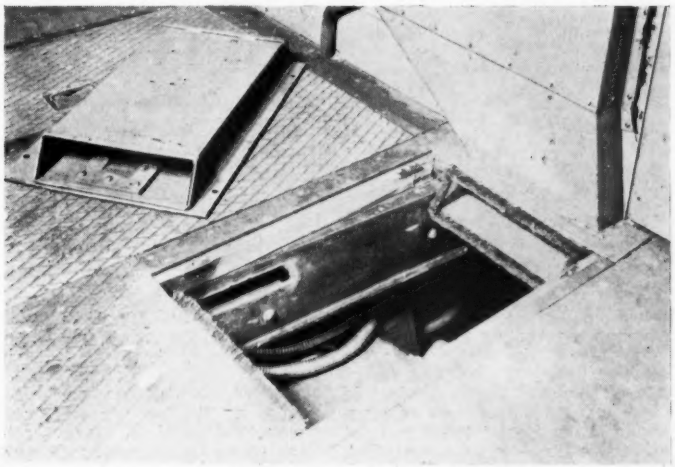
Motor	339	163	Lightweight
Weight (including gears and gear-case)	3·6 tons	3·38 tons	1·92 tons
H.p. max. accelerating	300	210	300
H.p. continuous ...	—	—	180
Type	Totally enclosed	Totally enclosed	Ventilated
Max. safe armature speed ...	1,600 r.p.m.	1,680 r.p.m.	2,550 r.p.m.
Gear ratio ...	21 : 59	23 : 57	17 : 65
Bearings	Sleeve	Sleeve	Roller

The use of roller axle suspension bearings in addition to armature bearings is very attractive from a maintenance viewpoint, and their adoption has been considered carefully. It was decided finally, however, that, successful as these had been on traction systems with insulated return, their use on a running rail return system might lead to trouble. Under heavy current conditions, such as overload or fault on the power circuit, it is difficult to shunt such bearings effectively with an axle earth-brush arrangement, and in view of the damage likely to result from pitting of races and rollers, it was considered advisable to retain the sleeve type.

Improvements have been made, however, in the sleeve bearings. In place of the usual heavy cast-steel bearing caps and oil boxes, fabricated top caps and oil boxes have been provided, which are 50 per cent. lighter and have 100 per cent. greater oil capacity. The increased capacity, ombined with the use of grease-lubricated armature bearings, enables a



Ducting arranged against partition in van, with roof settling chamber



Portion of air ducting combined with inspection cover

greater mileage to be run between oiling dates, with consequent economy.

As this was a trial installation, it was felt desirable to arrange the additional provision required for self-ventilated motors in such a way as to involve the least possible alteration to the coach bodywork and underframe. In the unlikely event of the new motors not proving satisfactory, they could be replaced by standard Type 339 motors with little trouble. The desirability of providing for this contingency has necessitated motor leads longer than in the final design.

The ventilating air is drawn through ducting in the guard's van from a settling chamber supplied from louvred openings in the coach roof. Each motor requires a volume of cooling air which rises to 600 cu. ft. per min. at 60 m.p.h. Ample duct area therefore was necessary; at the same time, the ducts themselves were kept as flat as possible for the sake of appearance.

As no running experience under Southern Railway conditions was available, it was thought best to err on the side of safety, and the settling chamber in the van roof was included in the layout so that as much as possible of the dust and moisture in the incoming air could be deposited clear of the motors.

The ultimate aim is an arrangement which will run between major motor overhauls (a period of 12-16 months) without attention for cleaning. Only time and experience will show whether this aim is likely to be attained.

One illustration on page 533 shows the ducting to No. 1 motor arranged against the van partition; the roof settling chamber; and the drain. The two plates cover cleaning and inspection openings.

Restriction of space available for ducting under the floor, coupled with the need for providing the usual access to commutators and gears, necessitated the combination of portions of the duct with floor inspection covers. This has offered a neat and effective solution of the problem. The photograph from which this illustration was reproduced was taken before completion of the work, and the motor leads have not yet been connected.

An Electrified Colliery Line in County Durham

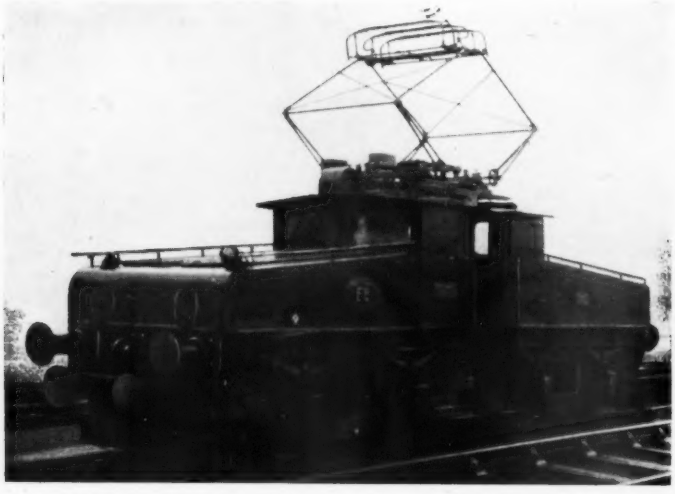
Electrically-operated lines now owned by the National Coal Board connect the steam-worked portion of the South Shields, Marsden & Whitburn Colliery Railway with the L.N.E.R. and the staithes on the River Tyne

AMONG many little-known railway systems which, until the beginning of this year, was operated by a private company is the South Shields, Marsden & Whitburn Colliery Railway, serving the properties until recently owned by the Harton Coal Co. Ltd. Whitburn Colliery is on the coast, some three miles south-east of South Shields, and the railway, which was constructed in 1870, was necessary not only to provide for the transport of the company's coal from the colliery to the coal staithes on the Tyne, or to the North Eastern Railway for shipment or disposal, but also to convey to and from their work the workmen employed at the colliery, the greater proportion of whom live in South Shields. The line was licensed in 1888 under the old Board of Trade regulations for the conveyance of passengers, and was so worked for many years. The construction of a new coast road in 1926, which necessitated some diversion of the railway, and the reconstruction of a bridge over the widened roadway near the colliery, called for a Ministry of Transport Order to work the line as a light railway. This Order was granted on August 7, 1926 (S.R. & O. No. 1066).

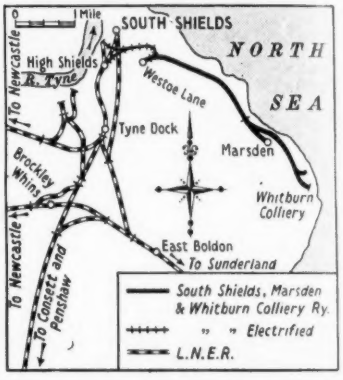
What may be termed the main line of the railway extends from Westoe Lane Station in South Shields to Whitburn, 2¼ miles distant. Westoe Lane is a terminus, and the interchange point between the steam-worked line to Whitburn and the electrically-worked section which connects with the L.N.E.R. lines in South Shields and the colliery staiths on the Tyne.

The other collieries in the borough formerly owned by the Harton Coal Co. Ltd., are also interconnected, and, because of the fact that many of these lines pass between domestic premises at close quarters, the local authorities insisted that they should be worked electrically to avoid smoke nuisance. Another reason for the conversion to electric working was the abundance of sharp curves and severe gradients. The conversion took place in 1907, and involved the erection of overhead conductor equipment to carry direct current at 540 to 575 volts. At first, power was generated by the colliery company, but for many years now has been taken from the local supply system through a substation at Westoe Lane.

There are ten electric locomotives, the first six of which were built by the Siemens-Schuckert Werke, No. 1 in 1907, No. 2 in 1908, Nos. 3 and 4 in 1909, and Nos. 5 and 6 in 1910. Nos. 7 and 8 were obtained from Kerr, Stuart & Co. Ltd., of Stoke-on-Trent, in 1910; No. 9 was built in 1913 by the A.E.G. of Berlin, and No. 10 in the same year, by Siemens. Nos. 1, 2, and 10 are of the four-wheel type, used mainly for shunting, and the others are of the Bo-Bo type. All are equipped with pantographs.



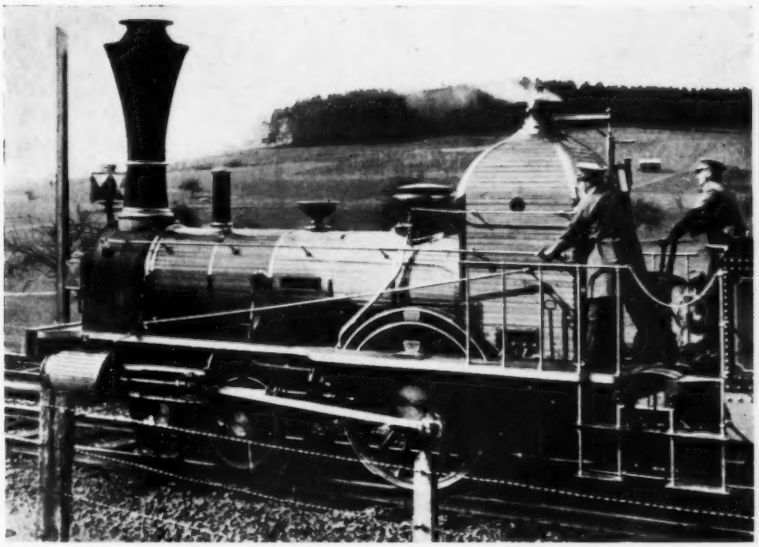
One of the two Kerr, Stuart double-bogie electric locomotives included in the colliery railway stock



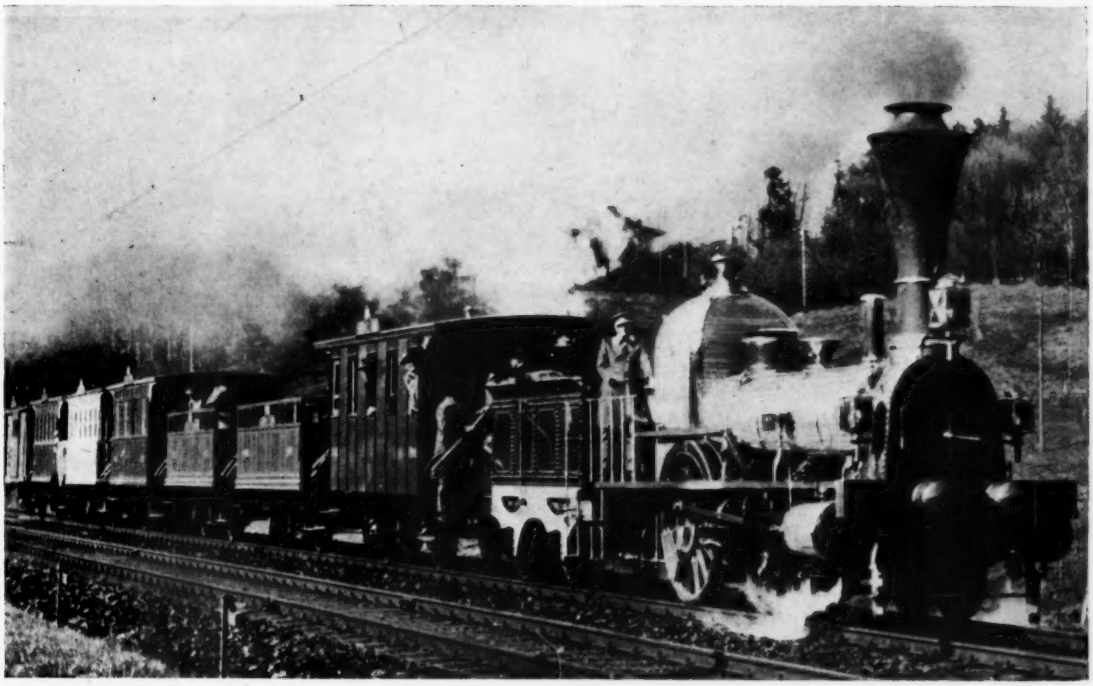
The steam-operated section and its electrified connections with the L.N.E.R.

SINGLE-PHASE AT 15,000 V. ON A METRE-GAUGE LINE.—A local railway in Switzerland claims the distinction of working the first 15,000-V. single-phase electric motor coaches on a metre-gauge system. The line connects the town of Bière, which is 2,300 ft. above sea level, with the little township of Morges, on the shores of the Lake of Geneva, 1,250 ft. above sea level. From the intermediate station of Apples, a 6½-mile branch leads to l'Isle. The main line is about 18 miles long. Current is supplied from the 15,000-V. grid of the Swiss Federal Railways at Morges. The overhead contact wire, with chain-type suspension, consists of copper, except on the Apples-l'Isle section, where wire of galvanised soft steel has been substituted. The rolling stock comprises four all-steel motor coaches, 54 ft. long over buffers. Each coach accommodates 40 passengers and 2 tons of luggage. The vehicles have a maximum speed of 40 m.p.h.

The Swiss Railway Jubilee Train



A facsimile prepared by the Swiss Locomotive & Machine Works at Winterthur of the "Limmat," one of the two original wood-fired locomotives of the Swiss Northern Railway, built at Karlsruhe in 1847 by the Maschinenfabrik von Emil Kessler



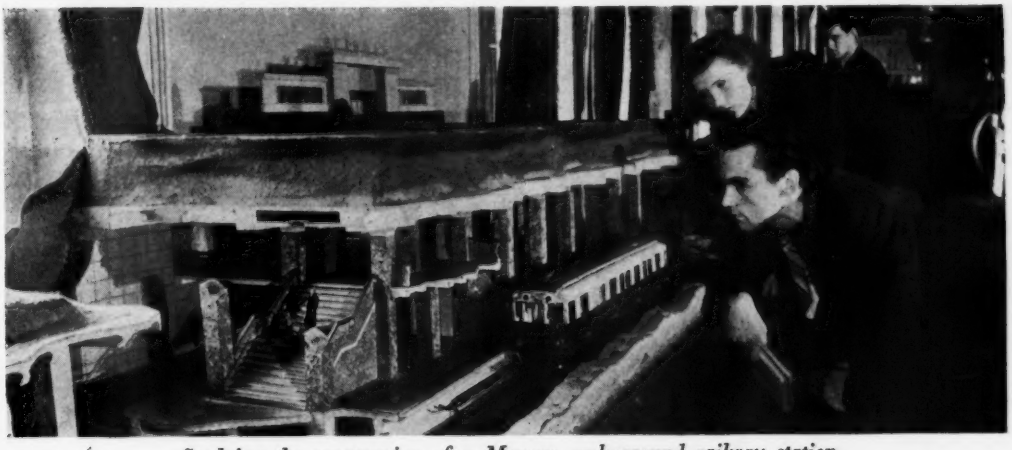
Modern reproduction of a train on the Swiss Northern Railway, between Zurich and Baden, which was the first railway in Switzerland and was opened for public traffic on August 9, 1847. To mark the centenary this year, this jubilee train is touring the country from April 20 until October 22 offering return rides over 8 to 12 miles sections at a fare of fr. 1.50 irrespective of class

A Junction in Flat-Bottom Track on the L.N.E.R.

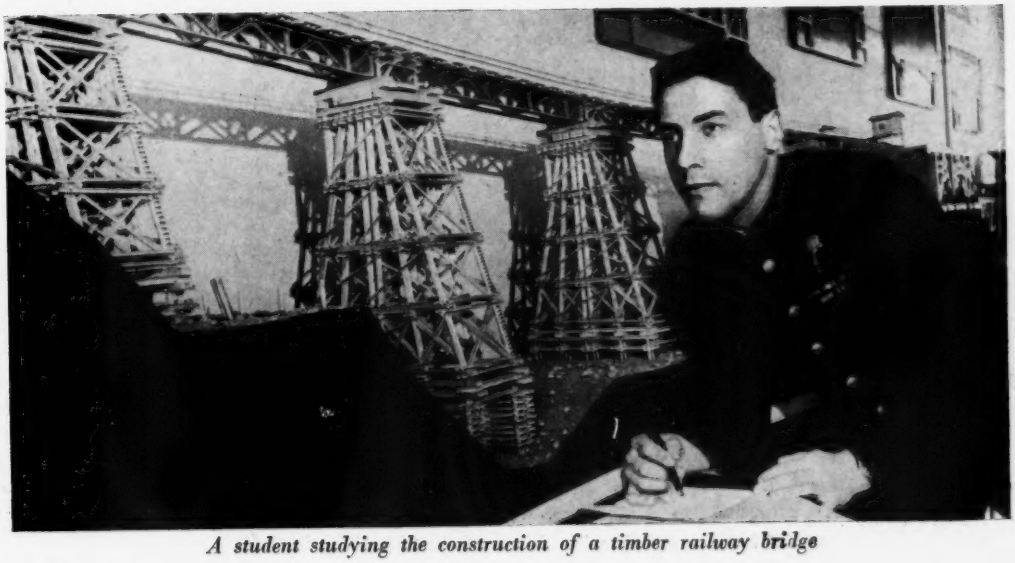
Towards the end of last year, the L.N.E.R. completed its most extensive installation of 110-lb. F.B. switches and crossing, at Benton Quarry on the East Coast main line north of Newcastle. The layout, which consists of two double junctions with "D" switches and 1 in 11 crossings, and a main to main crossover, was manufactured by Taylor Bros. (Sandiacre) Ltd., to L.N.E.R. design and incorporates a 1 in 20 rail cant throughout the connections; the fastenings are of the hook bolt and malleable iron-clip type. The track at Benton Quarry forms part of the Tyneside electrified area and the views show the conductor rail. The lineside garden is worthy of notice

Training Russian Railway Engineering Students

Two women students under instruction at the Institute of Railway Engineers in Moscow



Studying the construction of a Moscow underground railway station



A student studying the construction of a timber railway bridge

hook bolt and malleable iron-clip type. The track at Benton Quarry forms part of the Pinetic ... lineside garden is worthy of notice

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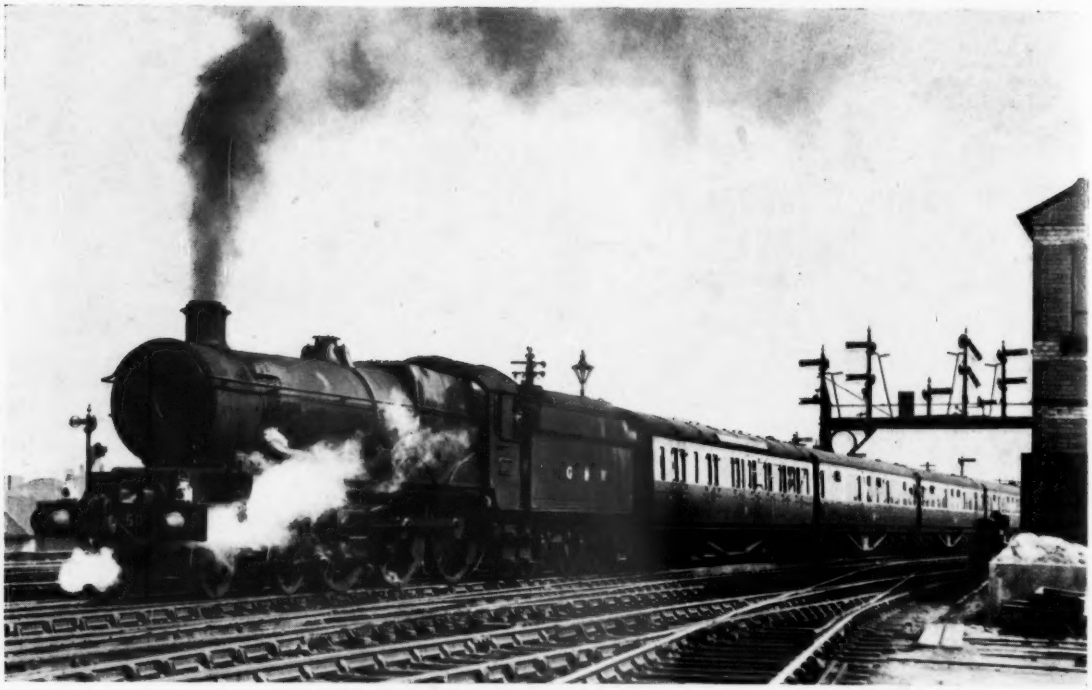
Modern Locomotive Power on the G.W.R.



"Castle" class locomotive No. 5083, fitted for burning oil, leaving Reading on a Bristol train. The G.W.R. is converting 25 "Castle" class engines as oil burners

Up Trowbridge fast train at Sonning Box, hauled by "County" class 4-6-0 No. 1027, "County of Stafford." The class was described in our August 17, 1945, issue

Photos] *[M. W. Earley*

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. CHIEF GENERAL MANAGER

The directors of the London & North Eastern Railway Company announce that Sir Charles H. Newton, Chief General Manager of the company, will retire under the age limit on June 6, 1947, after completing almost 50 years railway service. He has been appointed to a seat on the board, and his Directorship will take effect on the day after his retirement from the position of Chief General Manager.

Mr. Miles Beevor, Chief Legal Adviser to the company, has been appointed Acting Chief General Manager, as from June 7.

Mr. J. S. Tritton (a Partner in the firm of Rendel, Palmer & Tritton) has been elected President of the Institution of Locomotive Engineers for 1947-48, in succession to Mr. F. S. Whalley (Chairman of the Vulcan Foundry Limited), from June 1.

Mr. W. P. Bradbury, Chief Commercial Manager, and Mr. A. J. Pearson, Assistant to President, L.M.S.R., have returned from their visit to the U.S.A. and Canada.

Mr. F. Bostock has been elected to succeed Mr. C. N. Gallie, on his retirement next November, as General Secretary of the Railway Clerks' Association.

We regret to record the death, at the age of 78, of the Rt. Hon. G. W. Forbes, who was Prime Minister of New Zealand, 1930-35, and also Minister of Railways, 1931-35.

The Earl of Rothes and Mr. Allan Miller have been appointed to the board of the British Electric Traction Co. Ltd.

Mr. Harald Hamberg and Mr. H. N. Sporborg have been elected Directors of the Skefko Ball Bearing Co. Ltd.

Mr. W. Donaldson Wright has been elected Chairman of the East Midlands Section of the Institute of Transport for 1947-48, in succession to Mr. B. England.

We regret to record the death on May 15, at the age of 72, of Sir Frederick Charles Cook, C.B., D.S.O., M.C., M.I.C.E., F.S.I., a Partner in Howard Humphreys & Sons, Consulting Engineers, and, from 1935 to 1942, Chief Engineer (Highways), Ministry of Transport.

Mr. T. W. Royle has been elected President of the Institute of Transport for the year 1947-48. He will take office on October 1, 1947. Mr. Royle is a Vice-President of the L.M.S.R.

Colonel R. B. Emerson, Chief Commissioner of Railways, India, has arrived in the United Kingdom on leave. He will attend the International Railway Congress in Switzerland next month, and will return to India in July.

Mr. William T. Faricy, Vice-President & General Counsel of the Chicago & North Western Railway, who, as recorded in our April 11 issue, has been elected President of the Association of American Railroads, is 54 years old, and was born at St. Paul, Minnesota, where he received his education at the College of St. Thomas, and at the St. Paul College of Law. The greater part of his experience has been with the Chicago & North Western Railway and its subsidiary, the Chicago, St. Paul, Minneapolis & Omaha Railroad. He was appointed General Solicitor of the latter at St. Paul in 1929, and four years later became General Solicitor of the C.N.W.R. In 1942 he was promoted to be General Counsel of the C.N.W.R. in Chicago, and in 1944 was elected Vice-President & General Counsel, and a Director of the system and its subsidiaries. As chief counsel for the class I railways in the 1946 wages and rules disputes he served on the committee of five which represented the lines in contact with the White House at the time of the strike in May last year. He has served as Chairman of the Western Conference of Railway Counsel, and as a member of the Public Relations Advisory Committee of the Association of American Railroads. Mr. Faricy served in the Army from May, 1917, to July, 1919, at home and as a Captain in the 350th Infantry, 88th Division, in France. During his residence in St. Paul, he lectured at the St. Paul College of Law, and in Chicago he continued his active interest in education. He is an active member of the National Tax Association, the I.C.C. Practitioners' Association, and of the American, Illinois, Minnesota and California Bar Associations.

Mr. W. T. Faricy

Elected President, Association of American Railroads

Mr. Rupert E. Beckett, Chairman of the Westminster Bank Limited, has been elected President of the British Bankers' Association for the coming year. The Marquess of Linlithgow, Chairman of the Midland Bank Limited, has been elected a Vice-President of the Association. Mr. Beckett is a Director of the London & North Eastern Railway Company.

Mr. William Marshall Clark, General Manager of the South African Railways & Harbours, has been transferred from associate membership to membership of the Institution of Civil Engineers.

Mr. G. F. Sinclair, Deputy General Manager (Road Services), L.P.T.B., has been presented with the Order of Patriotic War, First Class, conferred on him by the Presidium of the Supreme Soviet of the U.S.S.R.

Sir Clifford Paterson has been awarded the James Alfred Ewing Medal for 1946 by the council of the Institution of Civil Engineers for his work in engineering research. Sir Clifford Paterson is Director, Research Laboratories, General Electric Co. Ltd.

We regret to record the death on May 17, at the age of 75, of Major Sir Edward Leggett, D.S.O., Chairman of the Natal-Zululand Railway Limited. He was Board of Trade Delegate to the International Railway Congress, 1895.

Mr. Allan Miller and Mr. D. J. Robarts have retired from the board of Broadcast Relay Service Limited; and Mr. J. S. Wills (Managing Director of the British Electric Traction Co. Ltd.) and Mr. R. P. Beddow (Chairman & Managing Director of the Antrim Electricity Supply Company) have joined the board of Broadcast Relay Service Limited, of which Mr. Wills has been appointed Chairman & Managing Director.

The Minister of Fuel & Power stated recently that Mr. Harold Hobson was resigning the Chairmanship of the Central Electricity Board from July 31 next, and that, to facilitate the arrangements for setting up the new organisation under the Electricity Bill, Sir Johnstone Wright, General Manager of the Board, had accepted his invitation to succeed Mr. Hobson during the interim period until the Central Electricity Board was taken over by the British Electricity Authority. The Minister also announced his decision to set up an organising committee, pending nationalisation, for the electricity industry, with Lord Citrine as Chairman; and that Lord Citrine was resigning from the National Coal Board, as a member of which Sir Joseph Hallsworth would succeed him.

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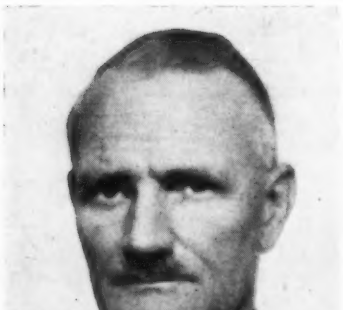
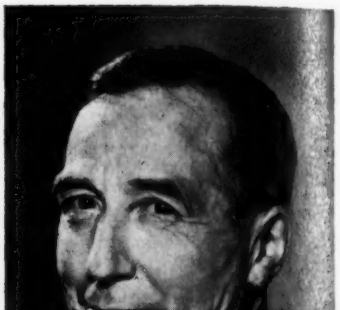


Mr. D. J. Stott

Appointed Chief Engineer, Gold Coast Government Railway

The late Mr. James Dalziel

Assistant Electrical Engineer, L.M.S.R., 1925-35



Mr. W. Naylor

Appointed Assistant Passenger Manager, North Eastern Area, L.N.E.R.

Mr. D. J. Stott, Senior Engineer, Gold Coast Government Railway, who, as recorded in our April 18 issue, has been appointed Chief Engineer, saw active service with the 1st Battalion, Seaforth Highlanders, from 1915 to 1919, and in the latter year commenced a five-year apprenticeship with the North British Railway at Edinburgh. In 1924 he was appointed an Assistant Engineer at Glasgow, L.N.E.R. In 1926 Mr. Stott joined the Eastern Bengal Railway as a Sub-Divisional Officer; and in 1930 he became Senior District Engineer, Jamaica Government Railway. He transferred to the Gold Coast Government Railway in 1936.

Mr. J. McClelland has retired from the position of General Passenger & Freight Agent, Victorian Government Railways. His services are being retained in the capacity of Rates Consultant. Mr. McClelland has been succeeded as General Passenger & Freight Agent by Mr. M. Ridgway.

We regret to record the death on May 16, at the age of 70, of Mr. James Dalziel, M.I.E.E., who was Assistant Electrical Engineer, L.M.S.R., from 1925 to 1935. Mr. Dalziel was educated at George Watson's College, and at Heriot Watt College, Edinburgh. He was first man and Silver Medallist in Honours Electrical Engineering, City & Guilds, in 1899. He served his apprenticeship with Bertrams Limited, Edinburgh, and gained further experience with Mavor & Coulson Limited, Glasgow, before joining the Midland Railway as an Electrical Inspector in 1899. In 1903, when the heavy electrical work was transferred to the Locomotive Department, he was placed in charge of electrical constructional work, and, in 1905, also of the general and hydraulic outdoor machinery. In 1914 he was appointed Chief Electrical Assistant to the Chief Mechanical Engineer, and two years later was given the supervision of all the company's road motors, both petrol and electric. During the 1914-18 war, in Sir Henry Fowler's absence on Government service, he took charge of the department jointly with Mr. J. E. Anderson. Subsequent to the amalgamation, and the separation of the Electrical from the C.M.E. Department, as an independent department, Mr. Dalziel became Assistant Electrical Engineer, L.M.S.R., in 1925, and he retired in 1935. In 1910 he was awarded a Telford Premium for his joint authorship with Mr. J. Sayers of a paper read before the Institution of Civil Engineers on the subject of the Heysham electrification. Mr. Dalziel was the author of a series of articles entitled "The Outdoor Machinery Department," in *The Railway Gazette* in 1940, since published in book form; and in 1944 he contributed to our columns an article, in five parts, since reprinted, on "Cargo Coaling Plants."

Mr. A. B. Innes Dick has been appointed Joint Managing Director of Talbot-Stead Tube Co. Ltd., a subsidiary of Tube Investments Limited. Mr. Dick remains Secretary of the parent company.

Mr. H. R. Peters, formerly Sales Promotion Manager of Specialloid Limited, has been appointed Assistant General Manager. Mr. E. S. Bailey, formerly Equipment Manager, has been appointed Home Sales Manager.

Mr. Walter Wright, of the Great Western Railway, well known in agricultural show circles, has retired, after 47 years' service. For the last 20 years he has been arranging rail transport for exhibitors to and from all parts of Great Britain and the movement of equipment from one show to another.

Mr. W. Naylor, Assistant Rolling Stock Controller, L.N.E.R., who, as recorded in our March 14 issue, has been appointed Assistant Passenger Manager, North Eastern Area, joined the North Eastern Railway at Harrogate in 1907. Before the war of 1914-18 he was employed on relief work in the York and Leeds districts, and during the war he spent two years with the Forces in France and was mentioned in dispatches. Afterwards he was engaged on staff work at Hull, Middlesbrough and York. In 1933 he was appointed Traffic Agent, Newcastle, New Bridge Street, L.N.E.R., and, in 1935, Head of Works Section, Superintendent's Office, York, where he was associated with important alterations to railway and dock installations and the introduction of extensive colour-light signalling in the North Eastern Area. In 1938, Mr. Naylor joined the staff of the Divisional General Manager, York, and was engaged on works and Parliamentary matters. He was appointed Assistant to the Locomotive Running Superintendent, York, in January, 1941, and Assistant Rolling Stock Controller in December, 1942, and has been also a member of the Inter-Company Freight Rolling Stock Committee from 1943 until his present appointment. In December, 1946, the L.N.E.R. inaugurated an organisation for the co-ordination and development of recreational facilities for the staff, and he was appointed Chairman of the North Eastern Area Recreation Committee.

Mr. A. J. Lee, Chief Mechanical Engineer, Great Western of Brazil Railway, is at present in England on leave.

We regret to record the death on April 13, at the age of 57, of Dr. James Kennedy Manson, M.B., Ch.B., who was Chief Medical Officer, South Indian Railway, from 1940 to 1946, when he returned to this country. At the time of his death he held an appointment as a Deputy-Commissioner with the Medical Section, Ministry of Pensions, at Blackpool. Dr. Manson was the son-in-law of Mr. J. Smyth, who is a former District Traffic Superintendent, Perth, L.M.S.R.

The following officers of the American Locomotive Company have been appointed members of a new administrative committee, over which Mr. R. B. McColl, President of the company, will preside, to plan, direct and co-ordinate all the company's activities: Messrs. P. T. Egbert, W. L. Lentz, W. S. Morris and N. C. Naylor, Vice-Presidents; Herman Press, Treasurer; and J. D. Vaughan, Comptroller; Mr. D. W. Fraser, Chairman of the company, will serve *ex-officio* as a member of the committee. Other appointments in the company recently announced are those of Messrs. W. A. Callison and W. E. Corrigan as Vice-Presidents in charge of Western Regional Sales and Eastern Regional Sales, respectively.

Institution of Locomotive Engineers

The annual luncheon of the Institution of Locomotive Engineers was held at the Dorchester Hotel, London, W.1, on May 15. Mr. F. S. Whalley, M.C., President of the Institution, was in the chair.

Mr. Alfred Barnes, Minister of Transport, in proposing the toast of "The Institution of Locomotive Engineers," paid a tribute to the value of the Institution and its members. When he looked around him he formed the conclusion that there were more locomotive engineers than there were locomotives running on British railways! He had become very locomotive conscious of late. He thought of them in terms of how many were under repair and unable to do their job on the British railways. He was heartened by the feeling that there was in reserve this body of personnel which would be able to get the railways out of their difficulties when materials and supplies became available.

He realised the extreme difficulties with which locomotive engineers were faced in trying to repair the ravages of the war and in getting British transport back to that standard of excellence which was the pride of the British railway industry. He was familiar with the very wide range of services which the personnel of the Institution had rendered to the Empire from time to time. He knew of the work they had done in Africa, India, Persia, and other parts during the war in providing railways with the means of transporting men and ammunition to the fronts. Members of the Institution not only played an important part in the production of valuable exports for the country, but they contributed to the upkeep of railways all over the world.

Mr. F. S. Whalley, in thanking the Minister for coming to the luncheon, said he thought that on an occasion such as that, members of the Institution should remember the overseas branches and the absent friends who were members of them. The overseas membership of the Institution represented a very large proportion of the whole, and it was growing.

At this point in history there could be no person more fitted to propose the toast of the Institution than the Minister of Transport; he might well be very interested in the health of locomotive engineers. After all, it was the locomotive engineer who kept the trains running, quite apart from present needs for manufacture and repair of rolling stock and the solution of mechanical difficulties.

Mr. O. V. S. Bulleid proposed the health of the guests and said that members of the Institution always hoped when they invited their guests to the annual luncheon that they would see the error of their ways and apply to the secretary for incorporation. At the present function no less than 46 per cent.—he was very modern and preferred to use a percentage instead of the facts—of those present were guests.

They were particularly flattered that the Minister had found time to come to the luncheon; he had referred to the fact that he was very well aware of the locomotive position. It would be difficult not to be. When he (Mr. Bulleid) looked around him and saw Mr. Wilmot, not to speak of the President, he thought that perhaps the repair of locomotives was a matter in which they were not particularly competent nor especially interested! Repair of locomotives, it seemed to be the agreed view of the trade, should be done in railway workshops. He thought that the proper place to build locomotives was in the field in which they would be used, if only because then their defects might be concealed!

He went on to welcome particularly among their guests Sir Cyril Hurcomb; Sir James Milne, who had attained the position which was due to a locomotive engineer; Sir Eustace Missenden, whose one regret, he suggested, must be that he had not been trained in a locomotive workshop; Sir Alan Mount, one of the greatest friends of the locomotive and of the railway industry; General Davidson; Colonel Slaughter; and Sir H. Osborne Mance.

Sir Osborne Mance responded briefly to the toast.

Among those present were:—

Messrs. N. L. Ablett, F. W. Abraham, E. Adams, W. A. Agnew, J. F. Alcock, T. J. Aldridge, L. B. Alexander, A. J. Allenby, H. H. Andrews, H. Andrew, H. Appleyard, S. Appleyard, J. C. Armstrong, S. V. Arnold, G. Arnott, W. J. Ash, E. S. Aslett.

Messrs. R. Bagwell, G. H. Bailey, F. J. Bance, H. Bannister, L. Barker, Alfred Barnes (Minister of Transport), C. P. Baty, William Bayliss, F. H. Beasant, J. E. Beckett, R. A. Beckett, A. E. Beecham, G. V. Beesley, A. E. Bennett, J. Bennett, M. G. Bennett, E. Billington, G. H. Binnie, S. T. Binstead, Commander W. T. Bird, Messrs. C. J. H. Bolton, F. S. Bond, R. C. Bond, L. Boulton, Comte de Bourbel, Messrs. A. J. Boyd, T. W. Bragg, J. Briggs, G. Brinkworth, D. F. Brown, I. Browne, E. G. Brunker, S. Buchanan, E. Bulman, O. V. Bulleid, N. Burke, D. C. Burton, R. Bury, M. G. Burrows.

Messrs. N. G. Cadman, W. T. S. Cairns, A. Campbell, Colonel K. Cantlie, Messrs. W. H. Capper, D. H. Cardew, J. Cave, H. R. Carver, T. E. Chrimes, G. R. Chrimes, H. C. Clarke, T. Clarke, C. F. Cleaver, C. S. Cocks, T. F. Coleman, Colonel G. Collingwood, Messrs. A. F. Collins, F. R. Collins, A. E. Cook, K. J. Cook, N. H. Cook, B. W. C. Cooke, D. F. Cooper, James Cooper, R. S. Cooper, T. Cooper, A. G. Corrie, B. J. Corrie, Lt.-Colonel G. C. Cotesworth, Messrs. H. R. Cotterill, H. P. R. Coveney, E. S. Cox, M. A. Crane, A. Roy Craven, R. Crawford, H. W. Crosthwait, Dr. J. F. Crowley.

Dr. C. Dadswell, Messrs. A. C. C. Damont, H. M. Dannatt, C. F. Davey, A. S. Davidson, Major-General A. E. Davidson, Messrs. H. Davies, A. J. Day, R. A. Dearden, C. E. Dee, G. P. Devaney, S. R. Devlin, J. C. Dewhurst, P. C. Dewhurst, V. F. Dittrich, F. Dixon, L. J. Dockerill, V. H. Drewry, R. J. Drury.

Messrs. L. Brooke Edwards, F. O. Ellis, H. B. Everard, C. N. Fairchild, H. Fairhead, C. F. Faith, W. O. Farringdon, H. N. S. Fearon, W. Featherstone, R. E. Fordham, E. J. Fouracre, B. O. Fox, W. S. Fraser.

Mr. V. Gartside, Commander H. V. Gaud, Messrs. H. F. S. Gedge, A. J. Gibson, I. H. Gilbert, T. B. Giles, A. S. Gillitt, R. K. Glascodine, R. T. Glascodine, G. E. Godfrey, G. T. Godrey, W. S. Graff-Baker, K. W. C. Grand, E. W. Greaves, R. L. Green, E. H. Greenly, H. M. K. Greenwood, L. Greenwood, T. Greenwood, Lt.-Colonel H. Gresham, Messrs. J. H. Gresham, J. N. Gresham, S. R. Gresham, R. Gresley, W. Griffith, J. R. Grimsdell, H. H. Grindley, D. S. A. Gudgin.

Messrs. J. Hadfield, R. E. Hagley, D. Haigh, R. H. Hamilton Wickes, J. Hampson, C. W. Hancock, M. O. Hannah, C. D. Hanna, E. W. Hanslip, F. D. M. Harding, L. W. Harding, F. A. Harper, G. H. Harrison, Major H. A. Harrison, Messrs. J. F. Harrison, R. S. F. B. Hart-Davies, R. F. Harvey, C. G. Hatherly, A. B. Henderson, N. B. Henderson, D. Hewitt, F. A. Hewson, H. A. Hicks, C. M. Hill, A. C. Hoare, R. B. Hoff, H. Holcroft, H. H. Holloway, B. Holroyd, A. G. Hopking, W. G. Hornett, W. R. Hornett, W. C. Hoskin, G. O. Houghton, W. A. Houghton, F. L. Howard, A. G. Howe, Colonel R. G. Hughff, Mr. J. S. Hunter, Sir Cyril Hurcomb.

Messrs. A. C. Illston, H. J. Iron, G. C. Jackson, G. Jendrissik, P. J. Jessop, A. Johnson, N. Johnson.

Messrs. J. A. Kay, W. G. Kefford, W. Kelway-Bamber, H. E. Kemp, E. Kent, G. Kettlewell, G. Key, Colonel W. King, Messrs. A. J. D. Kitson, W. S. Knight.

Messrs. D. R. Lamb, W. H. Lawrence, E. Lawton, L. J. Le Clair, K. H. Leech, W. Leech, J. D. Lewis, Martin Lewis, A. W. Lindridge, A. P. Linforth, W. F. Lockwood, E. E. Lloyd, J. H. P. Lloyd, M. C. Lloyd, R. E. Lloyd, L. Lynes.

Messrs. W. F. McDermid, A. B. MacLeod, J. P. Maitland, Brigadier-General Sir H. O. Mance, Messrs. A. W. Manser, P. L. Mardis, R. E. Marks, S. W. Marsh, V. M. Marshall, E. W. Marten, F. G. S. Martin, Dr. J. L. Martin, Messrs. F. Mason, D. C. H. Mathews, G. Matthews, R. E. G. Mayhew, H. M. Melhuish, Major J. R. Metcalfe, Messrs. R. Metcalfe, R. D. Metcalfe, Sir James Milne, Sir Eustace Missenden, Messrs. W. F. R. Mitchell, W. J. Mitchellhill, E. S. Moore, F. H. Morfey, S. H. Morris, Lt.-Colonel Sir Alan Mount, Mr. A. C. Mullin.

Messrs. H. A. M. Napier, O. S. Naylor, G. H. Negus, S. Newman, J. C. Nesbit, O. S. Nock, J. W. Norris, Captain A. R. S. Nutting, Messrs. R. Officer, G. E. Orton, A. H. Ottman, P. M. Otway.

Messrs. C. E. Parkes, C. R. Pasley, W. Paterson, J. J. C. Paterson, Noel Paton, R. B. Paul, I. K. F. Pearson, K. R. Pearson, W. Peck, A. J. Peech, W. N. Pellow, F. D. Playford, D. C. Plyer, E. Pollard, F. A. Pope, S. Potter, T. Potter, R. A. Powell, W. T. Powell, A. T. Priddle.

Messrs. H. W. Ralph, J. Rankin, V. P. Rawlings, W. E. A. Redfearn, H. W. H. Richards, W. Richardson, G. Rigby, J. L. Riordan, F. W. Roberts, Sir Reginald Robins, Messrs. M. D. Robinson, D. Robinson, J. D. Rogers, G. Rollason, A. Ross, Colonel H. Rudgard, Mr. D. M. Ryan.

Messrs. J. E. Sandham, H. H. Saunders, E. I. Scott, Major M. P. Sells, Messrs. L. Sibbett, A. W. Simmons, G. S. Simmons, F. Sinclair, A. H. Sommer, J. E. Sheldon, G. H. Sheffield, W. O. Skeat, Deane Skurry, W. F. Slater, Lt.-Colonel E. W. Slaughter, Messrs. R. A. Smeddle, C. L. M. Smith, Major J. H. Rae Smith, Messrs. R. T. Smith, J. E. Spear, C. E. Spurgeon, Sir William Stanier, Messrs. J. F. W. Still, C. W. Stokes, Brigadier J. Storar, Messrs. D. T. Strain, S. N. Sutherland, W. B. G. Swayne, N. W. Swinnerton.

Mr. A. F. Tabraham, Major R. L. Tanner, Messrs. J. Taylor, H. Taylor, E. W. Taylorson, J. W. Terry, F. Theakston, G. Thomas, H. Thorp, S. C. Townroe, J. S. Tritton, G. Turbett, E. M. Turnbull, T. F. Turner, C. W. Twynam.

Messrs. J. W. Vaughan, G. M. Vibart, J. F. B. Vidal, H. E. T. Vogel, J. W. Voelcker, C. C. H. Wade, C. C. Waddington, W. J. Wakley, L. Walker, Major J. H. de Waller, Messrs. A. F. Walters, J. R. Walton, C. H. Ward, H. D. Ward-Smith, L. G. Watkins, J. Watson, W. Watson, W. L. Watson, H. R. Webb, W. H. Webb, M. Weiss, G. M. Wells, F. Seymour Whalley (President), H. A. A. While, H. B. White, Colin R. White, R. H. Whitelegg, E. A. Wildey, W. A. Willox, H. Wilmott, A. Gordon Wilson, A. J. L. Winchester, J. P. Winder, B. D. Wix, F. R. Wix, G. F. Wix, E. Woodbridge, D. G. Woodman, J. B. Woodman, G. G. Woodward, W. P. Wrothall, A. R. Wright, H. E. Wright, J. L. Wright.

TRAVEL FILMS OF GREAT BRITAIN.—In conjunction with the British Travel Association, the Metro-Goldwyn-Mayer company recently held in its London theatre an advance view of two new Fitzpatrick travelogues. These films, which were made by James A. Fitzpatrick with the assistance of the British Travel Association, are in colour, and are entitled "Looking at London" and "Over the Seas to Belfast." They represent the first of a series of seven films of Great Britain.

Canadian Pacific Railway Company

The annual general meeting of the Canadian Pacific Railway Company was held in Montreal on May 7, Mr. W. M. Neal, Chairman & President of the company, presiding.

The Chairman, in moving the adoption of the report and accounts, opened his remarks with a tribute to Mr. D. C. Coleman, who relinquished the office of Chairman & President in February. Mr. Coleman's career with the Canadian Pacific added to the already fine traditions of the company's executive officers, and stood as a challenge to those who followed. Mr. Coleman was chief executive officer during the last three years of the war and the subsequent period of reconversion, and his burden consequently was unusually onerous. He had not wholly given up his railway activities, as he continued as a director of the company.

Business activity continued at a high level in 1946. Less grain traffic and a decline in passenger business were the only important exceptions to the sustained or increased volume of traffic. Freight revenue, excluding grain, was the heaviest of any year. The results of railway operations were far from remunerative, owing to the substantial cumulative increases in wage rates and material costs. Net earnings from railway operations were sufficient only to meet fixed charges and provide 2 per cent. towards dividends on the preference stock. The results were thus a paradox—a year of high business volume, and net earnings of meagre proportions. It was solely the record earnings from non-rail investments that permitted dividends to be maintained at 4 per cent. on the preference stock and 5 per cent. on the ordinary stock.

Maintenance Policy

The policy of the company always had been to keep maintenance expenditures above the point where service or property would be jeopardised. At the beginning of 1946, maintenance work was planned, not only to catch up on some of the maintenance which had been deferred owing to shortage of labour and material, but also to make other changes in the property which involved substantial maintenance expenditures. By the middle of the year, net earnings were falling so precipitously that good management dictated a curtailment of expenditures until the future was less obscure. Thus, while there had been some expansion of maintenance work in the first half of the year, this was offset by a reduction in the second half, and it was the considered opinion of their officers that in the year as a whole, no progress had been made in picking up the substantial back-log of work required to be done.

It would be recalled that from 1941 to 1945, provision was made in the accounts for the cost of materials for certain track work, and for the cost of repairs to rolling stock which it was necessary to defer due to wartime conditions. Had it been possible to carry out the programme originally planned for 1946, some of the deferred work would have been overtaken, and they would have begun to draw upon the deferred maintenance fund. It was the opinion of the directors that this fund should be used strictly for the purposes for which it was set aside. To use it for relief of normal maintenance would not be in keeping with sound practice.

In 1946, their expenditures for repairs of rolling stock were a little less than the aggregate of the expenditures of 1945 and the amount set aside in that year for deferred maintenance. No work was done which could be considered properly as reducing the back-log, and the need for the deferred maintenance fund had in no way been lessened. At the present time, under unusually favourable conditions of business volume, the high standards of railway service were threatened seriously because of the inadequacy of railway revenues. Periods of heavy traffic normally were periods of good earnings, and during such times, railways should be in a position to do sufficient maintenance work to tide them through lean years. Prevented from doing this by circumstances beyond their control, he could not but report that action in modernising their railway properties awaited a restoration of the proper balance between revenues and expenses.

Freight Rates

Last October, their company joined with the other Canadian railway companies in applying to the Board of Transport Commissioners for Canada for authority to make a general increase of 30 per cent. in freight rates within Canada, with the exception of the statutory grain rates and a partial exception in the rates on coal. It was estimated that the effect of the increase applied for, if in force for the full year 1947, would represent an overall increase in freight revenues of only 22·6 per cent. They were now in the fifth month of the year, and evidence in respect of the application still was proceeding. Freight rates in Canada had not been increased since 1920. Certain general reductions were made mainly in 1921 and 1922, and many individual reductions had been made since.

The progressive narrowing of the margin between earnings and expenses since 1943 had swept away all the benefits which might be expected normally to accrue from a heavy traffic volume. In 1946, when gross revenues were 93·4 per cent. greater than those of 1939, net railway earnings were less by 26·9 per cent., and the ratio of net earnings to gross earnings declined from 18·8 per cent. in 1939 to 7·1 per cent. in 1946. The obvious inadequacy of this margin was evident when it was compared with the ratio of net earnings to gross earnings for the twenty years 1911 to 1930, which averaged 24·0 per cent.

Another test of the unreasonableness of present railway net earnings was the rate of return on the investment in facilities devoted to the public service. When applied to their company, the test has provided further evidence of the need for an advance in freight rates. The net earnings in 1946 of $20·8 million were but 1·6 per cent. on an investment in railway property of $1·3 billion. The meagreness of such a return was self-evident, and it compared with the average annual rate of 4·6 per cent. realised in the 20-year period from 1911 to 1930. Notwithstanding the tremendous volume of traffic during the recent war period, the rate of return was below 4 per cent. in each year. Without an increase in freight rates, it was estimated that net railway earnings for 1947, a year of high traffic volume, would fall short even of meeting fixed charges. It was obvious, in such circumstances, that a strict conservation of existing cash resources was imperative.

Railway operating costs had advanced progressively during the past seven years, and for 1947 were expected to average about 45 per cent. higher for labour and material than in 1939. The burden of increased costs was onerous. At the present level of employment, an increase of 1 per cent. an hour for all railway officers and employees represented an added payroll expense of $1,800,000. Taken together, increased wage and material prices, as compared with 1939, had been computed as adding some $70,000,000 to their expenses. Railway property investment costs likewise had increased greatly. A locomotive costing $120,000 today replaced one of like purpose costing about $22,000 thirty-five years ago. A first class coach costing $72,000 today replaced one which originally cost $15,000. If the unit was air-conditioned, about 25 per cent. more would be added to the cost. The railway today was paying $5,400 for an ordinary box wagon, as compared with the cost of such a wagon thirty years ago of about $1,200.

The Chairman believed it might be asserted safely that all basic industries except railways now had shared in the general advance of the selling price of their commodities. It was their submission that the railways should not be denied equal treatment if they were to continue to play their full part in reconstruction. In the final analysis, the public could be given only the quality of service that railway earnings permitted.

The stockholders of their company had invested their capital in the enterprise and were entitled to a return on it. They numbered over 90,000, and there were probably as many bond and debenture holders who likewise had a stake in the affairs of the company. Those who furnished the enterprise with materials, supplies and other services, represented a vast army of people, perhaps even greater in number than those directly employed by or interested in the company. They expected, and, if prosperity was to be maintained, should have a steady market for their goods at fair prices.

The report and accounts were adopted.

Road Haulage Association Film Campaign

In order to give the public some idea of what will happen if the Transport Bill comes into force, the Road Haulage Association has made a film, under the title "When the Wheels Slow Down," which will be seen by some 2,000,000 people during the next three months. One complete film unit has been allocated to each of the 16 area offices of the Association, and the campaign started on Monday last.

In acknowledging the film as the most powerful medium for publicity, though at the same time admitting that political propaganda is not a box-office attraction, it was decided to take the film to the public instead of the public to see the film. For this purpose, daylight projection units have been organised to cover the whole country, and the exhibitions will be sited on open spaces adjacent to market places, shopping centres, etc., and on premises open to free access by the public, such as amusement arcades and empty shops. Halls will be hired when the film is shown in conjunction with an exhibition.

The projection apparatus, which includes 16 mm. projector with loud speaker and a translucent screen, is completely contained in a space 8 ft. × 5 ft. The apparatus is enclosed by panels so that the equipment and operator are concealed from the public. Attention is directed solely towards the screen. The unit is mobile and can be installed and dismantled in 30 minutes. The film takes eight minutes to show.

Ministry of Transport Accident Report

Stafford, L.M.S.R. : December 7, 1946

Colonel A. C. Trench, assisted by Brigadier C. A. Langley, inquired into the accident which occurred at 7.16 p.m. on December 7, 1946, at Stafford, L.M.S.R. The 4.35 p.m. local passenger train, Coventry to Stafford, consisting of four bogie coaches, drawn by 2-6-4 tank engine No. 2487, was standing on the down fast line, with the engine opposite No. 4 signal box at the south end of the station, when it was run into by the 3.45 p.m. express, Euston to Liverpool, which approached under clear signals and had been admitted irregularly into the block section between Nos. 1 and 4 boxes.

The local train driver had drawn up to the box, after being stopped at the home signal, on the arm for the main line being cleared, as his train was due to proceed into No. 2 down platform. Its brakes were off when the collision occurred, and it was driven forward 90 yd., the rear coach being telescoped 16 ft. and the second and third 12 ft. Fortunately it was lightly loaded and the rear coach practically empty. One passenger died in hospital from an illness accentuated by the accident, one was taken to hospital, and six suffered minor injuries.

The express consisted of 13 bogie coaches drawn by 4-6-0 engine No. 5512, piloted by another of the same class, No. 5500, put on at Rugby, as the train engine was steaming badly and its driver had asked at Roade for assistance. It was a fine, clear night with dry rail.

Indicator disc working is in operation between Nos. 1, 4, and 5 boxes, to control the clearing of certain signals in accordance with the condition of other signals in advance, owing to the short sections; and the down fast distant at No. 4 can be cleared only for the direct through route, clear of the platforms. There is certain interlocking between signal levers and block instruments, and proving of arms at danger, with fireman's call pillars at the No. 4 home signal gantries. These are of old design, and work on the open circuit principle. When the fireman actuates the plunger a "train waiting at signal" indicator drops alongside the block instrument, and places or holds it at "train on line"; and when the block commutator is placed to correspond—or if it is already in that position—a reply bell rings to indicate to the fireman that the message has been transmitted correctly. The apparatus failed to work when operated for the local train, and there was a broken connection in the signal box.

The Course of Events

The local train found Stafford Nos. 1 and 4 boxes distant signals against it. On passing through an overbridge, the driver saw all No. 4 home signals at "danger," and therefore stopped at them at about 7.12 p.m., sending the fireman to the call pillar. As the fireman could get no bell reply to repeated operation of the plunger, the driver was about to send him to the box, 85 yd. away, when the home signal for the direct route through the station was pulled off, and then the No. 5 box distant. As this was not the correct signal for the train, the driver decided to draw up level with the box, to which the fireman was just proceeding when the collision occurred.

The driver said that he whistled before moving forward. He was knocked over, but picked himself up and went to protect the up line. On returning, he noticed that his headlight was out. The guard observed that the wrong home signal was pulled off, and later saw the approach of the express, upon which he jumped out and showed a red hand signal. He noticed that the train was braking hard.

The leading driver of the express found the No. 1 and then the No. 4 box distant against him, but the latter came "off," and he increased speed to about 35 m.p.h. He then saw the No. 4 box home signal, with No. 5 box distant below, off, and noticed a tail lamp, which he took to be on another road. He then saw a white hand lamp, as though a guard was climbing out of the train; a flash of green, followed by red, made him realise the guard was signalling to him. He thought he was then about 300 yd. from the obstruction, and struck it at 20 to 25 m.p.h.

Separate up and down signalmen do duty at No. 4 box. The latter duly pulled off his home signal for the local train to run into the down platform line, and then had some telephone conversation with No. 1 box. He thought he heard "train entering section" just before the telephone call, but Colonel Trench considers it must have been received just before the conversation ended, otherwise the local train almost certainly would have sighted the signal for the platform line at "clear."

The signalman said he thought he heard the noise of a train passing while he was telephoning. Looking south, he saw no signs of one, and looking towards the station thought he could see a tail lamp. He concluded the local had passed, put back his signals, cleared back to No. 1 box, and shortly after accepted the express. This was duly signalled forward, and all signals pulled off for it, leading the local train, as explained, to draw forward.

Both signalmen said that some trouble had been experienced with the home signals not coming off fully, usually when temperature variations occurred, but Colonel Trench is satisfied that all were working correctly at the time.

Inspecting Officer's Conclusion

Responsibility for this accident must rest on the down signalman at Stafford No. 4 box, who accepted the express before the local train had passed through the section from No. 1 box. The evidence of the local train driver is not doubted, nor the signalman's statement that he had lowered the signal previously for that train to run to the platform. It must have been replaced before the local train arrived within sighting distance. The failure of the call pillar was a contributory factor. Had it worked, it is reasonably certain that the signalman would have noticed that, and have had time to warn No. 1 box; while had he not by then accepted the express, he could no longer have done so.

Only by an actual test can a break in the circuit of this old-fashioned apparatus be detected, but modern equipments work on the closed circuit principle, and faults are disclosed as they occur. The apparatus is an aid, and not a vital factor in safety; if it fails, the fireman knows it and has then to carry out Rule No. 55.

It is not possible to say whether the headlamp of the local train was alight before the accident, as the shock might have put it out, but as the signalman probably looked out before the train came in sight, it is unlikely that this affected the issue materially. No blame attaches to any driver, and the guard of the local train took prompt action to warn the express, which was being driven with reasonable care.

Remarks and Recommendations

A track circuit in No. 2 platform probably would have prevented the signalman from imagining he saw a tail light there.

Track-circuiting on a more extensive scale is very desirable at Stafford, as at many other busy stations, but the circumstances of this accident do not justify work there being given a higher place than that already allotted to it in the company's signalling modernisation programme, drawn up after thorough consideration of the conditions at each place and other relevant factors. Unfortunately, the programme is still delayed by material and labour shortages. The call pillar circuits are tested monthly, but Colonel Trench suggests that more frequent inspections are desirable in the case of older equipment of the open circuit type.

Staff and Labour Matters

Railway Shopmen

The first of the meetings to take place subsequent to the discussions with the Minister of Transport, to which reference was made in an editorial note in our May 16 issue, was that of the Railway Shopmen's National Council, held in London on May 12 to consider outstanding claims for consolidation of war advance into standard rates of pay, an increase of £1 per week in rates of pay and the introduction of a 40-hour week for railway shopmen. At the conclusion of the meeting the following announcement was issued on behalf of the council:—

At a meeting of the Railway Shopmen's National Council, held in London to-day, further discussions took place with regard to the unions' applications for a shorter working week, £1 increase in wages and consolidation. A certain degree of progress was made and it is anticipated that the companies will give a definite reply in regard to the shorter working week application in the course of the next few days, to be followed by a decision as early as possible in relation to the other applications.

Decasualisation of Dock Workers

The Minister of Labour & National Service has been notified by the National Joint Council for the Port Transport Industry that it has been unable to reach agreement on the question of the amount and basis of calculation of the guaranteed payment to be made to dock workers under paragraph 14 of the draft Dock Workers (Regulation of Employment) Order & Scheme, 1947. Objections to that clause will be considered in the statutory inquiry which Mr. John Cameron, K.C., has been appointed to make.

In the meantime, however, the Minister of Labour feels that he should receive impartial advice as to the basis of calculation of a guaranteed payment under a scheme made by virtue of the provisions of the Dock Workers (Regulation of Employment) Act, 1946. This guaranteed payment is to be made to those dock workers to whom the scheme applies who are available for work during periods in which employment, or full employment, is not available for them. The Minister has accordingly appointed the following to inquire into this matter and to make recommendations: Sir Hector J. W. Hetherington (Chairman), Messrs. V. R. Aronson, E. W. Bussey, W. Tudor Davies, and A. H. Mathias.

Filey Holiday Camp Station Opened

The official opening of Filey Holiday Camp Station, L.N.E.R., details of the layout of which, and of the new branch line serving it, were given in our issue of July 5, 1946, took place on May 10, and after the opening ceremony, performed by Lord Middleton, M.C., Lord Lieutenant of the East Riding of Yorkshire, the first train, drawn by Class "B1" 4-6-0 locomotive No. 1018, *Gnu*, left for York with returning campers.

Six Thousand Campers

There is accommodation for 6,000 visitors in the Butlin camp at Filey, and it is estimated that by the end of the present holiday season no fewer than 125,000 passengers will have passed through the new station, and that at the height of the season something like 6,000 campers will leave, or arrive at, the station every Saturday.

In declaring the station open, Lord Middleton, who was introduced by Mr. Geoffrey H. Kitson, Director, L.N.E.R., said that they now saw brought to fruition a project which had involved a number of problems, caused mainly by the shortage of labour and materials and the very severe winter through which they had just passed. These problems, however, had been overcome by the L.N.E.R., which had shown once again that private enterprise could still beat heavy odds and deliver the goods.

After the opening ceremony, there was a luncheon at which Mr. Ian Anderson, O.B.E., M.C., Chairman, Butlins Limited, presided, and proposed the toast of the L.N.E.R. Those who had assumed the responsibility of providing holidays for hundreds of thousands of people soon realised, he said, the importance of adequate transport facilities, and they were heavily in debt to the L.N.E.R. for its foresight in providing a branch line and station for the exclusive use of campers. But for the help and encouragement they had received from the railway companies at all times, Butlins could not have pulled through.

Mr. Geoffrey H. Kitson, responding, thanked the Chairman for his tribute to the L.N.E.R., and said that, whatever the future might bring forth as regards the administration of the railways, those who worked on the railways would continue to serve the public in the future as they had served it in the past, which was to the best of their ability.

Included in the above group at Filey Holiday Camp Station are Sir Charles Newton, Chief General Manager, L.N.E.R.; Mr. Ian Anderson, Chairman, Butlins Limited; Lady Newton; Mr. Geoffrey H. Kitson, Director, L.N.E.R.; Lord Middleton; and Mr. W. E. Butlin

Mr. B. H. Russell

About 140 friends gathered at a luncheon at the Savoy Hotel on Monday to honour Mr. Ben Harold Russell, London Manager of Cunard White Star Limited and the Cunard Steam Ship Co. Ltd., and to congratulate him on election to the board of the Cunard Steam Ship Company.

Sir Alexander Maxwell presided and in an introductory speech recalled his early days in Liverpool where he became associated with Mr. Russell.

In the course of short speeches which followed, Mr. D. H. Drakeford, who had taken an active part in the organisation of the function, spoke on behalf of West End passenger interests and was then followed by Mr. K. W. C. Grand, Assistant General Manager, Great Western Railway, who spoke on behalf of the railways. Mr. C. A. Barnard, speaking on behalf of British Overseas Airways, asked that his congratulations should be regarded as from all branches of the air services.

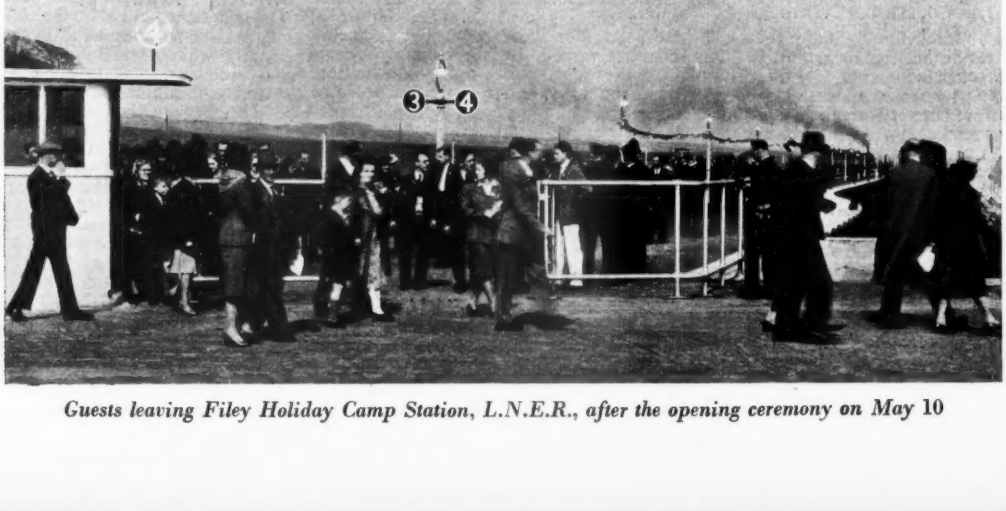
Mr. George C. Rhodes enlarged on the great differences between the early days in the City of London when all shipping companies and particularly the French Line and the Cunard Line were regarded as bitter opponents. He found a very different spirit animating the West End Passenger Managers when he moved West and soon found that one of the leading spirits of that comradeship was Mr. Russell.

Mr. J. B. Thom, European Manager, Canadian National Railways, spoke for Canadian interests, and tributes on behalf of the Press were paid by Mr. V. Christiansen, Editor of the *Daily Express*, and Mr. Canfield, Editor of *The Star*.

The toast of "The Guests" was proposed by Mr. James Maxwell, who recently succeeded Mr. Huskisson as General Manager of Thos. Cook & Son Ltd., and Lord Hacking, Vice-President of the British Travel Association, replied.

Among those present were:—

Lord Hacking, Sir Andrew Duncan, Sir A. McColl, Commander R. St. John, Judge Maxwell, and Messrs. C. A. Barnard, F. Bustard, A. C. Bonnaffon, R. P. Biddle, A. H. Brewster, J. Brennan, V. Christiansen, P. Clews, D. H. Drakeford, K. W. C. Grand, A. E. Hammett, R. M. Howe, Shirley James, J. A. Kay, V. J. Kernan, E. F. E. Livesey, J. Maxwell, F. W. Mottley, M. Moxon, G. E. Orton, Walter Pontin, A. L. Rawlinson, O. P. Thomas, G. C. Rhodes, R. M. T. Richards, E. J. Robertson, H. A. Short, John P. Taylor, J. B. Thom, A. E. Williams, Tarleton Winchester.



Guests leaving Filey Holiday Camp Station, L.N.E.R., after the opening ceremony on May 10

The Transport Bill in the House of Lords

Lord Portal warns Government of dislocation arising from too early vesting date

Lord Pakenham (Chancellor of the Duchy of Lancaster), moving the second reading of the Transport Bill in the House of Lords, on May 20, said that for many years before the war competition between railway and road haulage was creating a situation which was universally recognised as calling for correction. The Government was satisfied that any sound reorganisation of transport must involve closer integration. Such integration must produce an increased measure of monopoly, and such monopoly could only be tolerated if it was subjected to the public interest through the principle of public ownership.

Some great, comprehensive, co-ordinating measure was inevitable. The choice was: Were we to establish a private monopoly in transport or a public monopoly in the public interest? The Government had unhesitatingly chosen the latter course.

"Hereafter to be Revealed"

Viscount Swinton said this was a Government of planners, but where was the plan? It would be recalled that in the case of the South Sea Bubble, the public were invited to subscribe on account of a scheme "hereafter to be revealed." (Laughter.) History related that both the promoters and the investors came to a sticky end. Surely the Bill was another case of the unfortunate public being invited to a scheme "hereafter to be revealed."

The Opposition would not divide against the Bill. It would give it a Second Reading in spite of the advice tended by the Lord Chancellor that they must be chary of giving a Second Reading to a Bill which tried to translate a political manifesto into an Act of Parliament. It was its duty to subject the Bill to close, critical, and constructive examination in committee. No one could pretend that the Bill had received proper consideration in the House of Commons. Thirty-one clauses and five schedules had received no consideration at all. Upwards of 200 Government amendments had been made to the Bill without discussion. The Opposition would be animated by no sectional interests in its examination of the Bill.

Lord Beveridge said that the transport system could not be left as it was. At the same time, certain parts of the Bill required amendment and improvement. The transport industry was being made a closed industry because the small man who wanted to enter it had to prove the hardest of all things— a negative. It was an industry protected by law, and the Government stated it must make it a public monopoly. What was proposed now would multiply restrictions and rules which would make difficulties for every one.

Arbitrary Restrictions

There were any number of absurd and arbitrary restrictions and distinctions which would result from the operation of the Bill. The Government had not shown it was capable of running a vast State monopoly with sufficient space in it for initiative and experiment. It had not shown this monopoly would be able to resist sectional pressure from its employees to get more and more for themselves and charging more and more to the consumer.

Viscount Portal said that the Government was attempting to impose a major operation on the transport industry before it had even thought out a plan. It already had the railways under control and it would have been easy to continue that control until a plan had been worked out and approved.

The two major considerations under a plan would be the co-ordination of road and rail and the financing of any very large undertakings. He could assure the House that the four main-line railway companies would be more than able to finance any scheme they carried out in the next few years. It was not finance, but manpower and materials that were the limiting factors. The Government had so far been unable to devise any workable scheme for the various forms of transport or reach any decision that would fix the principles governing the fixation of rates. The burden of finding a solution of the many problems involved was thrown on the Transport Commission without any guidance from the Government. There would have to be a comprehensive inquiry into the whole subject before reaching a decision on the principles on which co-ordination was to be carried out.

If there were any members of the public who were led to believe that there would be great advantages on the change of ownership, they would be sadly disappointed. The revenue was going down, there was a lack of manpower and materials for maintenance and repair, and the services during the holiday months were likely to be no better than during the worst period of the war. If the Minister of Transport was faced with very heavy additional expenditure that was bound to send up the rates much higher than was contemplated. He doubted if the Government appreciated the magnitude of the task that had to be carried out before the end of the year. It took the railways over five years to amalgamate and consolidate only one form of transport. The Government was undertaking a much more comprehensive task in dealing with the whole of inland transport, and with the dislocation which must follow by making January 1, 1948, the vesting date, a fixed rather than a movable feast.

Compensation Proposals

Lord Kershaw said that the compensation proposals, particularly in relation to railway shares, could not fail to cause a good deal of anxiety. He could not seriously argue that the proposal to take the Stock Exchange prices on certain dates was not a fair reflection of the intrinsic value of the securities, particularly redeemable securities. But irredeemable securities did stand in a class apart and he had felt it worth while to consider whether some alternative or amendment might be possible in relation to them.

In a nationalised scheme it would be unthinkable to continue in perpetuity a 4 per cent. or 5 per cent. rate of interest for stockholders. If that were true, at what point between that rate of interest and the rate suggested in the Bill would it be equitable to compensate shareholders? He would be glad if he discovered an alternative which, while doing justice to the stockholders, did not place an unwarrantable burden on the nation.

Lord Brabazon regretted that the Government had not pursued the peculiarly English line of compromise, and set up a system of corporations, which would have obtained general approval. He could not take the view that it was wrong to touch the road haulers. For many years their activities had eaten into the guts of the railways, and that process would continue.

Few would disagree that the railways formed a most important part of our national economy. The only way to preserve them was to co-ordinate them with road haulage. Any one who took over the railways without at the same time taking a close hand on the road haulers would be taking over bankrupt affairs.

Lord Gifford said that the Bill would not do the slightest good to any single person in the country—except perhaps certain gentlemen who would receive large salaries as commissioners of the executives. Whatever the merits or demerits of the Bill, it must for several years cause dislocation and delay at a time when we could least afford it. The Government should certainly think again before it was too late.

Lord Walkden, Lord in Waiting, said that he could not understand noble lords asking, "Where is the plan?" This was a clear plan they had before them. There was to be the Commission and then there would be the five executives carrying on the day-to-day business entirely free from interference by politicians. Only the Minister would be there.

Viscount Swinton: If the politicians are to have no concern with the executives, why does not the Commission appoint the executives instead of the Minister?

Lord Walkden: Because the Minister will be responsible to Parliament. There will be no more interference by politicians than there is with the Post Office.

"Skeleton Without a Backbone"

Lord Teynham said the Bill, which proposed the biggest measure of socialisation ever attempted outside Russia, was a very bare skeleton without a backbone. The action of the guillotine in the House of Commons made it the more necessary that their lordships should now submit the Bill to the most searching inquiry. If the British railways were permitted to carry out their plans without hindrance, the country would have one of the finest transport systems in the world. State ownership of railways in other parts of the world had never produced a service approaching the efficiency of the British railways. If the Bill went on the Statute Book in its present form it would be a disaster to our national recovery.

Lord Rochdale said that, as an alternative, he would have liked to see a simple measure setting up a Commission of men experienced in transport to prepare a blueprint for British transport, so that Parliament could see what they were being committed to when discussing the measure. The Bill restricted the opportunities for incentives needlessly, and this would work to the detriment of the transport system of the country.

Viscount Ridley said he believed that administratively it would be found extremely difficult to run all the railways as one unit. He doubted whether the Bill could be sufficiently amended to make it efficient in running the railway system alone.

Lord Monkswell said the railways privately-owned, were far better prepared for their task in war than were other institutions under Government control. Now that the railways had recognised mistakes it would be unpardonable to hand them over to a Government department, the besetting sins of which—complacency and inertia—were those from which the railways were recovering.

The debate was adjourned.

Notes and News

Electric Lighting for L.M.S.R. Marshalling Yard.—In order to improve working conditions, the L.M.S.R. is to instal electric lighting at Chatterley Junction Marshalling Yard, between Stoke-on-Trent and Kidsgrove (Staffs.).

Assistant Accountant Required.—An assistant accountant, not over 32 years of age, is required by the Nigerian Government Railway, for one tour of 18 to 24 months, with possible permanency. See Official Notices on page 547.

Beyer, Peacock & Co. Ltd.—There was an increase of £17,576 in the net profit of Beyer, Peacock & Co. Ltd. for 1946, after taxation, the figure being £42,351. There is placed to reserve £50,000 against nil. Preference dividends are now up to date and required £9,075 compared with £39,600 in the previous year. The ordinary distribution of 5 per cent. is the first payment since 8 per cent. was paid in 1930. The amount carried forward is £15,463 (£40,437). The consolidated net profit, after taxation of the company and its subsidiary undertakings, was £55,966, as compared with £32,610 in 1945.

Derwent Valley Light Railway Company.—Gross receipts from the railway in 1946 were £12,347, and the collection and delivery of parcels and goods contributed £758, giving a total of £13,105. Expenditure on both services was £16,073, leaving a debit balance of £2,968. In the previous year gross receipts were higher at £21,314, and the expenditure of £17,571 left net receipts of £3,743. After adding miscellaneous receipts the net revenue for 1946 was £7,270, as against £7,926 in 1945. Adding the balance brought forward, and deducting fixed charges, the sum of £7,371 is available, from which the directors recommend allocating £1,000 to general reserve, and paying dividends of 5 per cent. on the preference and ordinary shares. A balance of £2,321 remains to be carried forward, as against £1,766 brought in.

Accountant Required for the Gold Coast.—An accountant between 24 and 34 years of age is required by the Government of the Gold Coast for the railway department, for two tours of 18 to 24 months, with possible permanency. See Official Notices on page 547.

Senior and Junior Assistants Required by a Main-Line Railway Company.—Senior and junior assistants are required by a main-line railway company in London, experienced in design and able to undertake surveys and the preparation of detailed working drawings. See Official Notices on page 547.

Permanent Way Institution.—The next meeting of the Permanent Way Institution, London Section, will be held at the White Hart Hotel, Bridge Street, Northampton, on May 31. Through the courtesy of Mr. W. K. Wallace, Chief Civil Engineer, L.M.S.R., members will be enabled to visit the Central Materials Depot, commencing at 2.45 p.m. After the conclusion of business at the meeting, a paper will be read by Mr. N. W. Swinnerton (L.M.S.R.) entitled "Welding as Applied to Track Work." On Wednesday, June 18, by permission of the Bell Punch Co. Ltd., members will be able to visit that company's works at Uxbridge.

Vickers Limited.—At a meeting of the board of Vickers Limited on April 17, it was decided to recommend for approval at the annual general meeting to be held on May 30 a final dividend on the ordinary stock of 8½ per cent. actual, less income tax (compared with 6 per cent. for 1945), making 12½ per cent. for the year ended December 31, 1946. Subject to such approval, payment will be made on May 30. Net profit for the year, after providing for taxation, but before transfer to sinking fund, is £1,076,224; the comparable figure in 1945 was £971,509. The transfer to contingencies was £250,000 (£250,000 in 1945); and to sinking fund, for redemption of 4 per cent. first mortgage debenture stock, £20,620 (£19,827 in 1945). The carry-forward is £1,123,001 (£1,073,704 in 1945).

Craven Bros. (Manchester) Limited.—The report for 1946 shows a final profit of £64,044, as against £111,335 in 1945. To this is added £30,000 as provision for refund of tax. After deducting bank interest, war risk insurance, deferred repairs,

Luncheon to Mr. Edward Huskisson

Mr. Edward Huskisson (left), Director, and recently retired General Manager of Thos. Cook & Son Ltd., with Mr. Shirley James, Personal Assistant to the General Manager, Pickfords Limited, who took the chair, at the recent luncheon in honour of Mr. Huskisson (see our last week's issue)

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices May 20, 1947	Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	54½	—
5% Con. Pref. ...	126½	107	119½	—
5% Red. Pref. (1950)	106½	102½	104½	—
5% Rt. Charge ...	140½	122½	134½	– 1
5% Cons. Guar. ...	137½	118½	130½	– 1
4% Deb.	129½	106	124½	– ½
4½% Deb.	129½	107	124½	—
4½% Deb.	130½	114	125½	—
5% Deb.	142½	125	137½	—
2½% Deb.	95½	81½	92½	—
L.M.S.R.				
Ord.	30½	26½	27	—
4% Pref. (1923) ...	64	52½	58	—
4% Pref.	86	75½	79½	—
5% Red. Pref. (1955)	105½	97	101½	—
4% Guar.	108½	100	102½	—
4% Deb.	120	103	113½	—
5% Red. Deb. (1952)	108½	105½	104½	—
L.N.E.R.				
5% Pref. Ord. ...	7	5	6½	—
Def. Ord.	3½	2½	3½	—
4% First Pref. ...	59½	50½	54	—
4% Second Pref. ...	29½	25½	26½	– ½
5% Red. Pref. (1955)	104	97	98½	—
4% First Guar. ...	107	98	101½	—
4% Second Guar. ...	101	90	95	– ½
3% Deb.	104	87½	98½	—
4% Deb.	119½	102½	113½	—
4½% Sinking Fund Red. Deb.	107½	101½	103½	—
SOUTHERN				
Pref. Ord.	79½	70	72½	—
Def. Ord.	24	19½	22½	+ ½
5% Pref.	125½	107	118½	—
5% Red. Pref. (1964)	115½	106½	111½	—
5% Guar. Pref. ...	137½	119	130½	– 1
5% Red. Guar. Pref. (1957)	115½	107½	111½	—
4% Deb.	129½	105½	124	– 1
5% Deb.	159½	125½	134½	– 1
4% Red. Deb. (1962-67)	113½	104½	110½	—
4% Red. Deb. (1970-80)	115½	104½	111½	—
FORTH BRIDGE				
4% Deb.	109	103	103½	—
4% Guar.	105	102	99½	—
L.P.T.B.				
4½ "A"	133½	120½	127½	– 1
5% "A"	142½	130½	136½	– 1
3% Guar. (1967-72) ...	108	98½	104½	—
5% "B"	128½	117½	123½	—
"C"	64½	56½	62½	—
MERSEY				
Ord.	34	30	33	—
3% Perp. Pref. ...	76	69	72½	—
4% Perp. Deb. ...	117½	103	111	—
3% Perp. Deb. ...	98	81	92½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41⅞	30½	31	+ 1
Pref.	63⅜	52	50	—
Guar.	97½	78½	87	—
Deb.	107	97½	101	+ 1
IRISH TRANSPORT				
Common	19/2½	16/9	15/6	+ 4½d
3% Deb.	107	100	105	– ½

* Latest available quotation

OFFICIAL NOTICES

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

ASSISTANT ACCOUNTANT required by the Nigerian Government Railway for one tour of 18 to 24 months, with possible permanency. Salary and expatriation pay £600, rising to £1,200 a year. Commencing salary according to age and war service. Outfit allowance £60. Free passages. Candidates not over 32 years of age, and preferably single, should be Associate Members or Students of one of the recognised appropriate professional bodies and should have had experience in one of the following branches of accountancy:—

Railway Revenue and Station Accounts; Civil or Mechanical Engineering Accounts and Costing; Statistics by Punched-Card Systems; Calculation and Payment of Wages; Stores Accounts; General Double-Entry Book-keeping.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/16797 on both letter and envelope.

REQUIRED by Main-Line Railway Company for work in London: Assistants (Senior and Junior) experienced in design and able to undertake surveys and the preparation of detailed working drawings, calculations, estimates and specifications. Engagement on a temporary basis at a salary of up to £12 per week, according to qualifications and experience. Applications, stating age, experience, etc., with copies of recent testimonials, to Box 114, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

BELLMAN HANGARS for workshops, storage, etc., supplied and erected under licence. 89 ft. 5 in. clear span, 18 ft. clear height, 175 ft. long. Door openings for full width at each end if required.—BELLMAN HANGARS LIMITED, Terminal House, Grosvenor Gardens, London, S.W.1. Sloane 5259.

ADVERTISER desires to acquire back issues of *The Railway Gazette, Diesel Railway Traction Supplement*, preferably a complete set. State issues available and price to Box 116 *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

ACCOUNTANT required by the Government of the Gold Coast for the Railway Department for two tours of 18 to 24 months, with possible permanency. Salary and overseas pay £600, rising to £1,200 a year. Commencing salary according to age and war service. Outfit allowance £60. Free passages. Candidates, age 24 to 34 years, must hold book-keeping and final accounting certificates, be capable of taking charge of a section of a railway accounts office and instructing staff in new or amended simple accounting procedure. Experience in railway accounts, though preferred, is not essential. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/17897 on both letter and envelope.

PLASTICS IN RAILWAY ENGINEERING. By T. Lovatt Williams and D. Warburton Brown. 1s. *By post* 1s. 2d.

and depreciation, the net profit of £70,674 compares with £73,041 in the preceding year. The directors recommend a final dividend of 15 per cent., making 20 per cent. for the year. The carry-forward of £231,606, subject to directors' fees, compares with £178,032 in 1945.

L.N.E.R. Whitsun Services.—Because of the coal situation only a limited number of relief trains can be run at Whitsun, and, to allow more coaches to be added to the trains, the L.N.E.R. will withdraw over 100 restaurant and buffet car services on weekdays and 24 on Sunday during the period May 23-27 inclusive. The only restaurant and buffet car services to continue during this period will be on the Continental boat trains between Liverpool Street and Harwich (Parkeston Quay), on the "East Anglian" express between Liverpool Street and Norwich and on 29 weekday trains in Scotland.

London Traffic Plan.—A comprehensive plan for speeding traffic in Central London was announced by the Minister of Transport in the House of Commons on May 12. The scheme will come into operation on May 27, following the Whitsun holiday, and will affect about 10 miles of streets. Briefly, between 11.30 a.m. and 6.30 p.m. from Mondays to Fridays, cars and taxis will not be allowed to wait in the restricted areas longer than is necessary to set down or pick up passengers, and the loading or unloading of goods must be done whenever possible outside the restricted hours within a period of 20 minutes. Slow moving traffic will be prohibited in those streets which were subject to this ban before the war.

Glasgow—Euston Express Mishap.—A Glasgow—Euston express train struck a light engine on the Docker Viaduct, between Oxenholme and Tebay, shortly after 2 p.m. on May 18. The locomotive and four leading coaches of the train were derailed, but remained upright. Three passengers, the driver and fireman of the light engine, and two cooks in the dining-car kitchen were stated to have been injured.

Franco-British Communications Conference.—A Reuters report states that the Franco-British Conference to study road, railway and telegraphic communications in West Africa opened at Dakar on May 16; and that the British delegates are:—Nigeria: Sir Hubert Walker (Director of Public Works), Mr. J. A. Gundry (Director of Posts & Telegraphs), and Mr. T. A. Odutola (member of the Legislative Council); Gold Coast: Mr. E. A. Boyce (Director of Public Works), Mr. A. J. Borland (Postmaster-General), and Mr. C. W. Tachie (member of the Legislative Council); Sierra Leone: Mr. W. H. Salkield (General Manager, Government Railway); Gambia: Mr. A. N. Robinson (Executive Engineer); West African Council: Mr. J. W. D. Locker (Acting Chief Secretary), Major Lillie Costello (Regional Information Officer); Colonial Office: Mr. J. K. Thompson (West African Department).

L.M.S.R. Ambulance Competition Results.—The L.M.S.R. International Ambulance Competition was held at Glasgow on May 13, when three leading L.M.S.R. teams from England & Wales met their opposite numbers from Scotland. The winning team was Crewe Machine Shop "B" with a score of 480 points out of a possible 550. Other competitors were Glasgow (Eglinton Street), 443½ points; Motherwell, 433; Wolverton Works (Bucks), 431½; Bolton Locomotive, 413½; and Kilmarnock, 384½ points. Lady Burrows, wife of Sir Robert Burrows, Chairman, L.M.S.R., presented the prizes.

Launching of Second G.W.R. Cross-Channel Steamer.—On May 20, Lady Portal, wife of Lord Portal, Chairman, G.W.R., launched the second of two new G.W.R. cross-Channel steamers from the Cammell Laird yard at Birkenhead. The vessel has been named *St. Patrick* after the vessel of the same name which was sunk by enemy action in June, 1941, and as a tribute to the captain and crew of her predecessor, flew her battle-scarred pennant at the launching. Like her sister ship, *St. David*, the launching of which on February 6 was reported in our February 7 issue, the *St. Patrick* will have accommodation for 1,300 passengers.

The Royal Family's Return from South African Tour

The train in which the King and Queen and the two Princesses travelled from Portsmouth to Waterloo on May 12 after the completion of their South African tour. The photograph reproduced above was taken as the train was passing Esher. The decorated engine is No. 850 "Lord Nelson"

Photo] [C. R. L. Coles

Railway Stock Market

Mr. Dalton's hint of the possibility of fresh steps to stem the drain on Great Britain's dollar resources, the "freeing" of sterling scheduled for July, and the knowledge that virtually half the American loan has been used, were among the factors which caused a rapid change of sentiment in stock markets. Moreover, they coincided with a set-back in Wall Street and also with wider realisation of the seriousness of the latest news from India.

In the circumstances, it is hardly surprising that, in contrast with the recent widely-spread demand, buyers have developed caution this week. On the other hand, selling was not heavy, and the set-back in industrials generally was small compared with the big gains recorded over the past few weeks. Results of leading industrial companies continued to create an excellent impression and there has been a further batch of dividend increases; but it is recognised that with few exceptions they relate to financial periods before the worst phase of the fuel crisis.

Iron and steel shares recorded small, irregular movements with buyers little in evidence because of nationalisation uncertainty, and renewed fears that the Government is unlikely to make an official statement in the next few weeks indicating which sections of the industry would be taken over in the event of nationalisation. Colvilles, United Steel, Dorman Long, and Guest Keen were among shares which receded after an earlier small rally. Vickers also came back, but were later inclined to improve in expectation of the annual meeting. Babcock & Wilcox have been relatively steady following the full results, and Clarke Chapman again moved higher on balance, while T. W. Ward showed steadiness at 53s., Beyer Peacock were firm at 26s. 3d., after publication of the full report, and G. D. Peters 5s. ordinary were 20s. 3d. Colliery shares again displayed firmness, and were inclined to respond to latest market break-up value estimates.

Although British Funds were affected to a very limited extent by the reactionary market conditions earlier in the week, home rails failed to take their cue from gilt-edged, and in the absence of demand, moved fractionally lower where changed. Sentiment was affected to some extent by the prospect of a further increase in fares and charges, necessitated by the trend in receipts, the latter reflecting the rise in prices of materials and wages. The trend in receipts does not affect the dividend position of railway stocks because between now and nationalisation, the fixed rental agreement remains in force.

Home rails, which, with few exceptions, are still well below "take-over" prices, continue to be regarded as a promising indirect means of acquiring an interest in gilt-edged, assuming that British Transport stock carries interest at the rate of 2½ per cent. The public still seems distrustful of securities of companies which are on the brink of nationalisation, but in recent months there has been steady institutional demand for home rails and this has offset selling by small investors who do not wish to exchange into British Transport stock.

Whether institutional holders of home rails intend to regard British Transport stock as a more than short term holding cannot be gauged at this stage, because the decision in this respect must be determined by the position of the gilt-edged market in the early part of next year. This, in its turn, will probably depend on whether Mr. Dalton can sustain his cheaper money policy in the face of the growing shortage of dollars and the extent to which the gilt-edged market will be swollen by the addition of large blocks of 2½ per cent. stocks arising from the Government's nationalisation projects. Metropolitan Assented stock showed a further rise to 60 this week.

The foreign railway market has been mainly reactionary with Brazil rails probably the main centre of attention because of the further sharp declines which have developed.

The latter declines reflect the view that no early "take-over" talks seem likely and that the question of eventual acquisition by Brazil turns on an agreement between Great Britain and Brazil as to the employment of sterling balances accumulated during the war. Leopoldina have fallen afresh to 16½, the preference stock to 51 and the debentures to 72, and Great Western of Brazil were 80s. San Paulo was relatively firm at 184. Central Uruguay stocks held recent gains fairly well, helped by news that the Uruguayan mission has sailed for London. There was a better tendency in Argentine rails with Buenos Ayres Great Southern stocks favoured, and sentiment generally was assisted by market calculations indicating that take-over terms may very well show all classes of stocks to be undervalued at current market prices. Canadian Pacifics moved back with Wall Street.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1945/6	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: May 20, 1947
				£	£		£	£	£				
South & Central America	Antofagasta	834	11.5.47	41,760	+ 9,580	19	728,410	627,570	+ 100,840	Ord. Stk.	12	8¾	15½
	Arg. N.E.	753	10.5.47	ps.309,500	+ps.12,300	45	ps.14,437,800	ps.13,316,500	+ps.1,121,300	,,	10	5¾	14
	Bolivar	174	Apr., 1947	$109,336	− $1.089	17	$449,648	$464,650	− $15,002	6 p.c. Deb.	8½	5½	15
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	34½
	B.A. Pacific	2,771	10.5.47	ps.2,650,000	+ps.293,000	45	ps.109,127,000	ps.103,021,000	+ps.6,106,000	Ord. Stk.	7	5	9
	B.A.G.S.	5,080	10.5.47	ps.3,716,000	+ps. 22,000	45	ps.164,474,000	ps.161,456,000	+ ps.3,018.000	Ord. Stk.	13¾	10½	18½
	B.A. Western	1,924	10.5.47	ps.1,366,000	+ps.135,000	45	ps.59,666,000	ps.54,.84,000	+ ps.5,582,000	,,	12¾	9½	26½
	Cent. Argentine	3,700	10.5.47	ps.3,250,930	− ps 11,312	45	ps.145,315,010	ps.142,196,976	+ ps.3,118,034	,,	9¾	7	20
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅞	17½
	Cent. Uruguay	970	10.5.47	43,574	− 3,750	45	1,694,429	1,778,990	− 84,561	Ord. Stk.	7½	4	25
	Costa Rica	262	Mar., 1947	32,528	+ 1,760	39	252,900	252,872	+ 28	Stk.	16½	13	12
	Dorada	70	Apr., 1947	29,700	+ 400	17	119,200	115,275	+ 3,925	1 Mt. Deb.	103	102	106½
	Entre Rios	808	10.5.47	ps.398,000	−ps.35,600	45	ps.19,335,000	ps.19,110,100	+ ps.224,900	Ord. Stk.	7½	4½	8
	G.W. of Brazil	1,030	10.5.47	27,300	+ 3,000	19	678,700	564,600	+ 114.100	Ord. Stk.	30/-	23/6	60/-
	Inter. Ctl. Amer.	794	Mar., 1947	$1,264,115	+ $273,636	13	$3,591,376	$2,914,695	+ $676,681	—	—	—	—
	La Guaira	22¾	Apr., 1947	$101,968	− $11,228	17	$457,043	$460,888	− $3,845	5 p.c. Deb.	78	70	87½
	Leopoldina	1,9 8	10.5.47	60,977	+ 7,648	19	1,205,170	1,069,092	+ 136,078	Ord. Stk.	4½	3½	12½
	Mexican	483	31.5.46	ps.1,464,000	+ps.459,100	22	ps.7,706,200	ps.13,441,600	+ps.5,220,200	Ord. Stk.	¼	¼	¼
	Midland Uruguay	319	Apr., 1947	17,503	+ 343	43	167,262	181,451	− 14,189	—	—	—	—
	Nitrate	382	15.5.47	9,756	+ 2,633	19	80,185	83,031	− 2,846	Ord. Sh.	75/6	67/6	83/9
	N.W. of Uruguay	113	Mar., 1947	5,671	+ 994	39	49,155	49,373	− 218	—	—	—	—
	Paraguay Cent.	274	9.5.47	G66,051	− G1,202	45	G2,828,860	G2,718,624	+ G110,236	Pr.Li.Stk.	79⅛	77	60½
	Peru Corp.	1,059	Apr., 1947	161,601	+ 12,510	43	1,518,215	1,401,933	+ 116,282	Pref.	10⅛	7⅛	10
	Salvador	100	Mar., 1947	c209,000	+ c34,000	39	c1,338,000	c1,255,000	+ c83,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60⅛	50½	183½
	Taltal	156	Apr., 1947	3,385	− 1,795	43	41,015	33,200	+ 7,815	Ord. Sh.	17/-	10/6	20/-
	United of Havana	1,301	11.5.47	109.967	+ 27,181	45	3,021,981	2,715,654	+ 306,327	Ord. Stk.	3	1	3½
	Uruguay Northern	73	Apr., 1947	1,438	− 145	43	12,767	17,350	− 4,583	—	—	—	—
Canada	Canadian National	23,535	Feb., 1947	7,767,000	+ 553,250	8	15,981,500	14,939,000	+ 1,042,500	—	—	—	—
	Canadian Pacific	17,037	14.5.47	1,494,250	+ 219,000	19	27,317,250	25,963,750	+ 1,353,500	Ord. Stk.	24	14⅜	16½
Various	Barsi Light†	202	Mar., 1947	26,032	+ 3,375	52	271,575	272,272	− 697	Ord. Stk.	131	123	114½
	Beira	204	Feb., 1947	90,568	+ 24,422	20	446,240	352,628	+ 93,612	—	—	—	—
	Egyptian Delta	607	31.3.47	18,365	+ 422	52	672,501	629,876	+ 42,625	Prf. Sh.	10	8½	6½
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55½	72
	Mid. of W. Australia	277	Mar., 1947	18,239	− 127	39	148,908	152,484	− 3,576	Inc. Deb.	97½	85	65
	Nigeria	1,900	Feb., 1947	353,073	+ 2,154	46	4,193,473	3,153,983	+ 1,039,490	—	—	—	—
	Rhodesia	2,445	Feb., 1947	533,750	+ 67,632	20	2,761,173	2,476,064	+ 285,109	—	—	—	—
	South African	13,323	12.4.47	1,119,859	+ 25,393	2	2,044,620	1,989,476	+ 55,144	—	—	—	—
	Victoria	4,774	Jan., 1947	1,314,795	+ 110,075	30	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee